

The magazine for **AUSTRALIAN** Amateurs



June 2003

Volume 71 No 6



Amateur Radio

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*Amateurs still
leading the way in*
LF & VLF
developments —

2 new articles:
*The state of the art on
Long Wave*

by John Adcock VK3ACA

*600 metres and beyond:
A long wave adventure*
by Dale Hughes VK2DSH

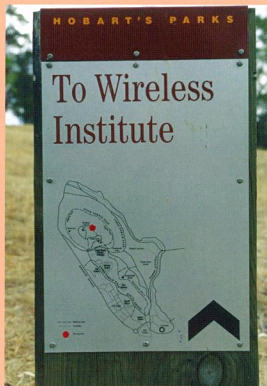
RON WILKINSON
ACHIEVEMENT
AWARD

Doug McArthur VK3UM
wins achievement award
for world-class
moon-bounce station

ISSN 0002-6859



Hobart City Council promotes WIA



Trail sign, "To Wireless Institute" with map.

The Wireless Institute has been specially mentioned by the Hobart City Council in its interpretative promotion of parks in the municipality.

Tasmania's Southern Branch clubrooms are located close to Hobart's CBD on top of the Domain parkland. Previously the site of coastal radio station VIH, the rooms are of historical interest.

Tracks through, remnant natural bush connect points of interest for walkers. A road also leads to the rooms past the Botanical Gardens and Government House.

Signs in the immediate vicinity boldly state "To Wireless Institute" with a map showing exactly where one is heading.

The main driveway sign gives a potted history of the site with the following text; "Wireless Institute: The coastal station, as it was formerly known, was established by the Commonwealth Government in 1912 and was an integral part of the early twentieth century communications network, linking the first Antarctic expeditions with the rest of the world."

The clubrooms are open most Wednesday afternoons. Visitors are welcome and can call VK7OTC on the club's 147.600 MHz FM output repeater for directions if required.

Photographs courtesy of Bob VK7KRW.



Clubrooms located at top of Hobart Domain (VK7OTC).



Amateur Radio

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Our Cover this month

WIA President Ernie Hocking VK1LK presents the 2003 Ron Wilkinson
Achievement Award to Doug McArthur VK3UM. Story onpage 22

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted), at \$4.00 each (including postage within Australia) to members.

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Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radio communication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Member of the
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Editorial Comment

Colwyn Low VK5UE

Conspiracy? What conspiracy?

This month we are seeing the feedback from the WIA Federal Council/WIA AGM. The WIA Council has decided to put the Entrance Level licence concept to the ACA and is presently surveying members for their views. It really surprises me the number of comments I have seen on the "WIA Conspiracy" theme. There is always the problem of what is pushing what when fundamental changes are proposed to an existing structure. However this Licensing Structure has been in place for many decades and even the introduction of the Novice Licence did not depart far from the "Need to pass a tough test to join the exclusive ranks of Radio Amateurs, who all know that a CW skill is absolutely necessary to be a real Amateur."

Now I can hear the howling, but in reality, up until WWII CW was an essential mode to be skilled in. In the 21st century CW is one of many modes and its use is very dependent on the choice of the operator or driven by the need to have a simple communications mode for weak signal work without a computer.

June 2003 is not June 1945. Computers are tools and most Amateurs have one. Some choose to connect it to

their transceiver, others do not. Some use SSB and others FM for speech QSOs. Some of us use Packet and some use modern software supported digital modes. Some of us are happy with IRLP. Some use TV. We are no longer a group of very special people who can communicate using RF. If you do not think this is true then just count the

number of your friends who have a mobile phone that can connect them to anyone with a phone anywhere the world with noise free channels. What would you have given for that if you were a Radio Amateur 50 years ago?

So we have to wake up to the fact that the world has changed. We have to look at where our hobby lies in the modern scheme of things. We have to decide if we keep it so exclusive that it dies with us.

I found it interesting that in a letter I received recently the writer proposed the use of eQSO on the Internet, and then went on to say they were using this as a carrier for CW. Use it as a teaching tool yes, but why use more encryption than is necessary to get a message from A to B?

One great problem is that the WIA speaks to the ACA on behalf of all Australian Radio Amateurs, but is only supported by about a third. It would be really interesting to know if it is the present members, the actions of the WIA in the past, or just a willingness to let others pay to keep their privileges that

keeps the Amateurs out of contact with the WIA. Sure, we could do a lot more if we had more members. But to keep saying the WIA is just trying to perpetuate itself in its old mode is no longer valid. If all Amateurs do not get together then all that is good in

We have to wake up to the fact that the world has changed. We have to look at where our hobby lies in the modern scheme of things. We have to decide if we keep it so exclusive that it dies with us.

the hobby of Amateur Radio, and the fine traditions of community service from the AMATEUR SERVICE will soon be forgotten. We would be lucky if a historian found references to them in the collections of the National Library or in some dusty, almost forgotten local Communications Museum.

What do you want Amateur Radio to be tomorrow?

Colwyn VK5UE

Update on the Foundation Licence

Discussions on the proposed new foundation licence seem to have occupied just about every spare minute for the last month. Jim Linton VK3PC quickly developed the members survey after the AGM. After a couple of modifications the survey managed to make it to the publisher in time to appear in May's AR for VK3, VK2 and VK7. I believe that the VK4 survey will be in the next issue of QTC. Other divisions have either already surveyed their members or are adopting a more direct approach.

Even before the survey is completed I have received a large number of informal email and paper correspondence about the proposal which all indicate a high level of support. There have been a few suggestions that there are significant numbers of amateurs with concerns about the proposal. At this stage they have certainly not made their views known to me although I have received comments from half a dozen amateurs. The general themes identified have been:

- A concern that the new licence will result in a reduction in skill levels.
- A desire to maintain a progression in licences and the privileges.
- The need to engage with Commonwealth Agencies and Industry to promote Amateur Radio

I would like to personally assure all amateurs that everyone working on the development of the Foundation Licence proposal has the best interests of amateur radio at heart. It is a difficult time since I know that many of you would like to know the details of the proposal. However I would ask you to be patient. Until we have received your views and fully developed the WIA position, and then sat down and worked through the issues with the ACA a lot of the details will simply not be known.

Please bear with us. As soon as we know anything we will let you know, and remember that the only official source of information is AR or the WIA Federal web site. If you hear odd rumours circulating in newsgroups, mail reflectors or the dark recesses of clubrooms please refer back to AR or the WIA Federal web site for clarification. If you are still unclear then contact your

local division or write to me directly.

The WIA will continue to work on understanding the views of all Amateurs on this matter.

As a matter of courtesy to the ACA I recently met with them to brief them on WIA position with respect to the proposed licence. This was a very useful meeting where the ACA indicated that

they were in agreement that a reform of the amateur radio licence was required, partly as a result of WRC 2003 and partly to reflect the changing role of ACA. It is their intention to develop a discussion paper on the matter and write to all amateurs shortly after WRC2003. It is expected that the analysis of the submissions they receive will be complete in early 2004. Subsequent changes to the regulations will be worked through during 2004 with the revised regulations being published in first quarter 2005. I will be developing a separate report on this meeting as soon as possible.

The WIA will continue to work on understanding the views of all amateurs on this matter. These views will be summarised in the formal WIA submission to the ACA discussion paper.

Examinations

Some 18 months ago many of you will recall that the WIA made a submission to the ACA in relation to further devolution of the examinations. This activity has now been completed and the ACA have appointed the WIA as an "approved organisation" for the

purposes of setting amateur examination papers. This is an important step towards reform of the administration of the hobby and a key aspect to the running of any future foundation licence examinations. As the details of the impact of this become clear I will be issuing a separate paper describing how the changes will affect the administration of examinations.

Changes to the 70 cm band

In late 2002 I brought to your attention some proposed changes to the amateur use of the 70 cm band in NSW. These changes will have an affect on amateur activities on the 420-430 MHz portion of the band in order to accommodate new emergency services requirements. The ACA has released a document describing the changes. This document can be found on both the ACA and the WIA web sites. The WIA was fortunate to be able to work closely with Technisyst who have been implementing the new systems with the NSW Government. This cooperation has been very helpful in enabling the NSW WIA to adapt to the changes with minimal impact to the amateur radio service.

IARU Region 3 uncertainty with SARS

The final piece of news that I have this month is the impact that the Severe Acute Respiratory Syndrome (SARS) outbreak has had on the planned International Amateur Radio Union Region 3 meeting later this year. IARU will confirm whether the meeting is delayed or continues as scheduled. I am sure that you will all join with me in wishing good health to all amateurs affected by the SARS outbreak.

So 73s for now and I look forward to hearing you comments, either directly or via the divisions. All the best in amateur radio

Ernie Hocking VK1LK

The state of the art on Long Wave

John Adcock VK3ACA

This is a brief report on some things that have been happening in this region on LF (Low Frequency) or Long wave since my last article on the subject in AR, "The Day we Crossed the Tasman on Long Wave" Ref. 1. In this article reference is made to recent use of D.S.P. (digital signal processing) using a computer for weak signal detection. The author also acknowledges advice given by Bob ZL2CA, Richard VK7RO and some information from "Break-in".

Advantages and disadvantages of communicating on LF have been discussed to some length in previous articles and these will not be discussed here.

This article is not very detailed and the LF field is changing daily so my apologies if there are inaccuracies in the article!

The World scene briefly

In America an "unlicensed" band (CB band) has been used by amateurs since the start of CB. The unlicensed band, 160 to 190 kHz was intended for local, in house communications or control systems and not for long distance communications by amateurs. This facility allowed a maximum 1 watt input to an antenna no longer than 15 metres. Antennas of this type with typically less than 0.1% efficiency do not provide very much power. Never the less, American amateurs achieved some success with this mode especially using weak signal receiving techniques.

Prior to amateurs anywhere in the world being allowed to use a regulation defined low frequency band amateur band some amateurs obtained "Experimental licenses" (later known as a "scientific license"). In this country these are expensive and rather limiting.

Around 1990 New Zealand amateurs were given the use of the band 165 to 190 kHz and Papua were given the 160 to 190 kHz band at the same time. In New Zealand amateurs are allowed 5 watts EIRP (approx. 1.5 watts actual radiated power from a short mono pole). This frequency range was based on the American unlicensed allocation. The band was issued on a non-interference to other services basis.

The main objections by licensing authorities in most countries to increasing amateur capability in the 160 to 190 kHz region are:-

1. That it is likely to cause interference to pilot carriers used on power lines used by power companies.
2. That the allocation is inside the Long Wave broadcast band in region one. Region 1 includes Asiatic Russia and Europe and Africa. (This objection applies more in America than here.)

In Australia the authorities have taken the view that they will consider any proposal which may be agreed to by the ITU. Such a proposal may be put at the next World Administrative Radio Conference.

Amateurs in UK were issued with a 73 kHz band (71.6 to 74.4 kHz) in 1996. In 1998 this was replaced with the more generally issued 135.7 to 137.8 kHz band in some European countries. This latter band has been allowed in a number of European countries which include UK, Germany, Portugal, Ireland, France, Switzerland, Italy, Luxembourg, Austria, Czech Republic, Slovak Republic, Belgium, Spain, Denmark, Holland, Sweden, Romania, Venezuela and several former Soviet states. The European band is just below the "region one Long wave broadcast band". Recently Argentina was allocated a band near the European band. The 73 kHz band is still being used but it is intended to be phased out.

There is a lot of negotiating going on in many countries for an LF band particularly in US but to date the Americans do not have an official low frequency amateur band.

VK and ZL activity using standard techniques

Activity in Australia has been rather slow. There are a few amateurs in Australia holding "Scientific Licenses". At the moment this does not include the author, I held such a license 10 years ago and have now let it lapse. Robert Milne VK7ZAL with the call sign AX2TAR appears to be the only one who is using his license. He has made transmissions using Morse CW and SSB but because of his limited license status he has to generate morse with the assistance of VK7FB. So far Robert has had 2 way communications with ZL1WB. There are several VK listeners who send reports but as far as I know, Richard VK7RO and myself, VK3ACA, are the only Australian amateurs who have weak signal DSP receiving capability on LF. Steve VK2ZOT and some other VK2s sometimes send in reports.

In New Zealand a group of interested amateurs run a net on Thursday evening in which Morse CW is the mode used in the LF transmissions. The net, known as "the low frequency group", starts on 80 metres at 0830z, 8.30 pm. NZ time on 3.670 MHz SSB. This net is open to any interested VK amateurs as well as ZL. The group of NZ amateurs arrange LF transmissions on 181.4 kHz, which start at 0900z, each transmission runs for 2 minutes. There are usually 4 to 6 participants and at the end of the approximately 10 minute period, reports are exchanged back on 80 metres. Arrangements are then made for a second test run starting at 1000z and the same procedure of reports is repeated. The net concludes about 1030z. These

times are put back 1 hour for daylight savings i.e., start time of net, 0730Z.

At my QTH the results of this have not been very good so far. ZL1WB who has an enormous antenna can usually be heard here and should be good copy in a quiet location. Other ZLs are sometimes detectable here using DSP. But of course, this being designed for very slow morse code only draws a single line for ordinary morse and the morse characters are not visible.

Eighty metres itself is not all that good and quite often I can only copy one or two of the people in the net. Now summer season has started the 80 metre net is almost impossible, the net operates at the same NZ time, and with daylight savings it starts well before sunset.

Receivers and Antennas

A note on receivers and antennas is in order. A lot has been written on this subject in other articles. Ref. 2 gives a few examples. Except when a good quality dedicated receiver is used such as an "MN26C compass receiver" most ordinary receivers won't pick up much using a simple antenna. This lack of activity with simple antennas is partly because of interference (cross modulation) from strong signals from the broadcast band and partly because the random length of wire has a high impedance and the receiver has a 50 ohm input. Almost any receiver, which covers LF, will pick up a great deal if a highly selective antenna tuner or coupler is used. I usually use an antenna tuner with the main antenna connected as a Tee but some people prefer an active whip antenna or an active loop antenna. Active short e-field (vertical) antennas are said to have an advantage in that they do not pick up noise in the near field as strongly as the main field.

I can't speak with much experience with these types of antennas at this instance but improved performance of small antenna elements may simply depend upon where it is placed in the back yard in relation to the noise source.

The use of weak signal techniques and QRSS

There are several softwares available for use in computers, which use the sound card as a modem. They process the signal using fast Fourier transforms to show a sustained single frequency signal

as a line on the screen. Argo is most commonly used and this has a range of time constants covering times from 3 second dots to 120 second dots. Argo is free ware and is available from a site www.weaksignals.com. The input to the sound card is at audio frequency. In my case I use an FT990 set on CW, when I set the receiver to the nominated frequency the audio tone comes out at 700 Hz.

These weak signal techniques are similar to methods used by amateurs for E.M.E. and meteor scatter techniques used on UHF and PSK used on HF.

The transmission of very slow morse known as QRSS can be as morse code with a single frequency and dots and dashes in the standard manner or more usually, frequency shift morse code is used. QRSS FSK seems to be a new invention. In it, all the dots are the same length (e.g., 120s) with no spaces in the letter. The morse is sent with a higher and lower frequency, the higher dots representing dashes and the lower dots representing dots.

See the examples. The result on the screen is intended to be read by eye. There are softwares that have text capability one of which is known as Jason.

The transmitted frequency and the receiver must be very stable over the period of the transmission. Any morse transmission has to be keyboard entered with appropriate QRSS software. It is quite impossible to hand send or ear read this mode. The receiver for QRSS must be of high frequency stability. Modern transceiver or receivers having a "master oscillator" to lock all local oscillators and BFO and having a frequency stability of 10 ppm are best for the job. These rigs are the type that offer a TCXO or OCXO upgrade to 0.5 ppm although the upgrade does not seem necessary on LF. Of course the receiver must be capable of reception down to 100 kHz to cover the 136 kHz band. For transmission, there is a software known as qrs205.

The main advantage of QRSS is that it can receive signals well below the noise level compared with audible modes even when using a narrow CW filter. Up to -20 to -30 dB improvement is claimed for 120 s. dots. Another advantage is that it can separate the main signal from an interfering signal even when the interfering signal is less than 1 Hz from

the main signal. The Argo screen can show several signals in the spectrum of the display and it is therefore easy to pick out the required signal. By comparison if a single very narrow band pass receiver were only used it would be almost impossible to pick out the required signal.

The use of weak signal techniques does cause some differences of opinion in amateur circles. Some people quite interested in LF either do not like the use of computers in radio reception or they do not have the capability in their shack while others who have the capability but are not interested in LF. This division of opinion occurs both here and in New Zealand. If you can't use good old hand sent CW then it isn't worth using. I personally am not very keen on computer aided techniques but at least they do allow you to get an idea as to where you stand with signal level. For example, if the signal is readable with 1 watt radiated power with QRSS 120 second dots you could say that it might be readability 5 with 1 kW and using hand sent morse (actually 1 kW radiated power is a bit beyond our capability but QRSS is quite useful for people who like breaking records). If the QRSS signal is readable with 3 second dots it is reasonable that quite a good QSO could be made even if a bit slow.

Practical results with transmissions from Quartz Hill

Quartz Hill is an area about 15 km South West of Wellington and overlooking Cook Strait. The area was used by the New Zealand Broadcasting service as a receiving station and by the New Zealand Post and Telegraph Department for fixed and maritime mobile services.

The Wellington Amateur radio club had been looking for a site for a club station when in 1996 the club learned that the broadcast receiving station was to be relinquished and sold to the Electricity Commission of New Zealand. The club negotiated with the new owners to manage the site and use the buildings until required. The main amateur radio activity on the site has been the construction and use of Vee beams for HF and a rather large end fed long wire inverted Vee for 160 m. The 160 m. antenna made the basis of an antenna which has been used by the LF

group. On 2200 metres the antenna is basically an end fed length of wire with some vertical component approximately 1/10 of a wavelength long. The club station has the special call sign ZL6QH.

About 2 years ago a number of members of the LF group using a station at Quartz Hill with the call sign ZL6QH began making tests using QRSS on several frequencies around 184 kHz. The tests were made on pre-announced Saturday nights and were carried out between NZ sunset and sunrise with the hope of being copied in America or Europe. The author has copied some of the transmissions here in Melbourne.

Last year the Wellington LF group obtained permission to operate in the European LF Amateur band on a frequency of 137.7888 kHz. The group use an EIRP is 5 watts on 180 kHz and 4 watts on 138 kHz.

So far the results from Quartz Hill have been extremely good. Signals from Quartz Hill were originally transmitted on 174.4 kHz and since December 2001 transmission on 137.7888 kHz. The good results from Quartz hill are probably due to the use of their large antenna.

When transmitting a signal intended for very long distance, 120 second dots with 0.4 Hz frequency shift is used. The transmission from Quartz Hill send only the letter Q. The letter Q consists of two up dots, one down dot and one up dot, see examples. Faster transmission was intended if good reception was indicated. Transmissions from Quartz Hill have been received at several trans. Pacific locations mainly just before dawn at the receiving location. The signals are always detectable in Melbourne from just before sunset.

Four Argo screens are shown here as typical examples, Figs 1, 3, and 4 are for reception at the authors QTH, they are - Fig 1. Reception of ZL6QH on 30th June 2001 at approx. 8.0 pm local time on 184.4 kHz, 1 Hz shift (note 700 Hz offset in receiver when receiving CW). The transmission is at 120 Hz dots and the reception is as for 10 second dots. Note that this is a strong signal.

Discussion

- Figures 3 and 4 represent reception from ZL6Q on a daylight path and a night path. According to calculations of path loss (see table below) winter daytime ionospheric propagation is quite possible. The result shown in these tests indicate that the daylight path is not as good as expected.

The following are the calculated path losses, which are in addition to the normally expected losses based on the normal spreading and geometry of the path. This is based on the following, a path length of 2568 km, reflection layer height, day 75 km, and night 90 km. They consist of ground loss at the low launching angle modified by the effect of convergence and loss in the



Fig 3 Reception of ZL6QH on 21st September 2002 at approx. 3.00 pm local time on 184.4 kHz and 2 Hz shift, this was an all daylight path. The transmission and Argo setting are for 30 second dots. The dashes are at 699.5 Hz and the dots at 697.5, other lines are interference. Reception at in the next time period on 138 kHz was similar. While a winter ionospheric path should be possible this result was about readability 3. The ticks are 60 seconds part.

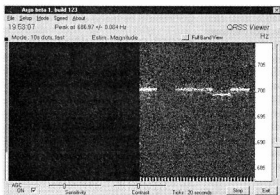


Fig. 1 shows the full screen, the subsequent diagrams as half screen.

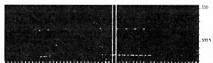


Fig 2 This is an Argo trace taken by Steve VE7SL just before dawn of ZL6QH on 22nd September 2001 on 184.4 kHz. The transmission and Argo setting is for 120 second dots and 0.4 Hz shift. Note that the Trace is inverted with the dots at the top, this is because of inversion in Steve's receiver set up. The two vertical lines are calibration line 240 seconds apart and the ticks are also 240 seconds apart.

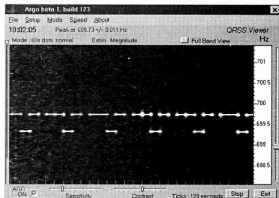


Fig 4 Reception of ZL6QH on 21st September 2002 at approx. 7.00 pm local time on 137.7890 kHz and 0.4 Hz shift. The transmission is at 120 second dots and Argo setting is for 60 second dots and 120 second ticks. This is a very strong signal. The Argo was later set as for 3 second dots and the signal was still very clear although, in this case, the frequency shift was too small for 3 second dots setting. The signal would have been readability 5 at 3 second dots and would have been easily copyable by ear in a quiet location. On this occasion there were no reports of long distance copy.

reflection coefficient of the ionosphere. See Ref. 3.

Additional loss on the darkness path on 138 kHz - 13.5 dB

Additional loss on the daylight path for a winter day on 138 kHz - 24.4 dB

Additional loss on the darkness path on 184 kHz - 18.0 dB

Additional loss on the daylight path for a winter day on 184 kHz - 33.0 dB

Table 1

From this theoretical calculation the daylight path should have been quite good on 138 kHz. This did not agree with the observed result but more testing is required to obtain a better average result. Calculations indicate that surface wave would be too far down even 138 kHz. Even a path over seawater would not be any use.

2. The improvement in readability using Argo was enormous even on 3 second dots. There is a lot of spurious carrier interference at this

QTH as well as the usual atmospheric noise and man made noise and this makes it very difficult to hear anything by ear. If a comparable narrow band filter were available in a receiver (say .01 Hz wide for example) it would be almost impossible to find but still uncopiable because the ear is unable to differentiate between the noise and the signal. Therefore is there anyone versed in information theory who could analyse these results to show the benefits of using this type of DSP. This could be an interesting exercise for someone doing a university thesis.

3. One additional reason why DSP using fast Fourier transforms will work in this case is that "low frequency" electromagnetic signals propagate with a very high phase and frequency stability. This method could not be used on HF because of multipathing causing continual phase instability. It would be interesting to test the method on MF namely 160 metres and see what

improvements in readability could be made using QRSS.

References

1. "The Day we crossed the Tasman", John Adcock VK3ACA. AR, April 1993. See also "VK Amateurs on 196 kHz", Don VK3BDJ, "Amateur Radio Action" September 1992.
2. LF Scene. Break-In August 1996 and May 1997.
An active loop converter for LF Bands, Lloyd Butler VK5BR. AR July 2000, see also references in the article.
3. "Propagation of Long Radio Waves", John Adcock VK3ACA, Amateur Radio June to September 1991. This article is in the web sites with corrections and updates: - www.lwca.org/library/lfprop/adcock/lfprop1.htm
www.lwca.org/library/lfprop/adcock/LFEXTRA.htm
Also visit the "Long Wave Club of America". www.lwca.org/

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Mount Gambier Convention June 7-8 2003

The South East Radio Group VK5SR will again be hosting the

Annual Radio Convention

&

Australian Fox Hunting Championship

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600 metres and beyond: *A long wave adventure*

Developments are currently taking place in the low frequency spectrum, an area long neglected by amateurs.

Dale Hughes VK2DSH shows that amateurs can still be in the forefront of technical advances.

Radio technology is now over 100 years old. During that time, it has progressed from spark transmitters and 'cats whiskers' to the latest solid-state technology operating at 100 GHz and beyond. Early intercontinental transmissions took place at low frequencies, which required huge antennae and high transmitter power. This technology was soon overtaken by short wave systems, which could provide worldwide coverage using much lower power and much smaller antennae. Amateur radio operators played a large part in opening up the short wave spectrum and we continue to make major use of that spectrum today. However, low frequencies (LF) and very low frequencies (VLF) are still used for many purposes and some countries have LF amateur allocations. For the purpose of this article, I will refer to LF transmissions as those with a frequency lower than 500 kHz, that is, a wavelength longer than 600 metre. The early history of radio is fascinating and I would encourage the reader to read references 1 and 2 as they provide much interesting information and history.

The spectrum below 500 kHz is used by a number of services, some of these are:

- Non Directional Beacons (NDBs) are used by aircraft for navigation. In Australia, NDB's occupy a range of frequencies from 200 kHz to 450 kHz. Their location can be identified by the two or three letter code that is transmitted repeatedly. NDB's are easily heard using simple receivers and a small antenna. More sophisticated receiver systems can

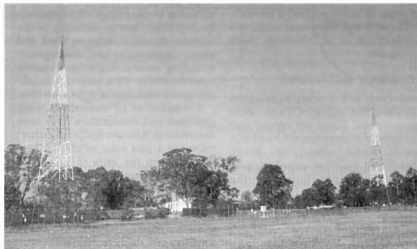


Figure 1: the NDB at Canberra Airport, one of many similar beacons scattered around Australia

receive NDB's over ranges of up to 2000km. From my location in southern New South Wales, I can receive NDB signals from New Zealand to Woomera in South Australia.

Some NDBs transmit terminal information by voice. For example:

Terminal	Frequency	Call sign
Canberra	265 kHz	CB
East Sale	350 kHz	ESL
Wagga Wagga	221 kHz	WG
Richmond	347 kHz	RIC
Nowra	359 kHz	NWA
Edinburgh	311 kHz	EDN

Terminal information gives weather and runway information for the site. Figure 1 shows a typical NDB transmitter site.

- Standard time and frequency transmissions are transmitted by a number of nations on low frequencies. In Australia, time signals can be heard on 40,000 kHz (JJY Japan) and 60,000 kHz (WWVB USA). JJY transmits its call sign in Morse code at 15 minutes past and to the hour. These signals are easily recognised by the time pips sent every second. The pips vary in

length, and can be decoded to give the time. Transmissions are also made on 25 kHz, 75 kHz and 77.5 kHz from Europe.

- Navies of many nations use low frequency systems for reliable long-range communications. These signals are very strong and easily received. They are all encoded, however some of them are still use Morse code and transmit their call sign on a regular basis. Presently the Australian Navy transmits on approximately 13 kHz from the former Omega facility near Sale in Victoria. Signals are also transmitted from North West Cape in Western Australia. The Indian station VTX3 is occasionally heard on 18.2 kHz transmitting fast Morse code along with its call sign at regular intervals.
- A number of commercial broadcasters transmit on LF, mainly from Europe. Their carriers can be sometimes heard in this part of the world. So far, no program material has been received at this location.
- LF Amateur allocations exist in a number of countries e.g. New Zealand, USA, Great Britain and

some European countries. In addition, several Australian amateur operators transmit using special scientific class licences on various spot frequencies.

- While not a service, natural radio signals exist at VLF. Whistlers and other phenomena can be used to probe the ionosphere and are a topic of active academic research. Several web sites exist which are devoted to monitoring these signals.

Amateur activities

Receive only activities can be as simple as listening and logging NDB's and other transmissions. There are several web sites devoted to reception of LF and VLF signals, these sites offer much information on what signals can be heard as well as various reception techniques.

As has happened in most other areas of life, the computer is making it's presence felt and a number of programs for reception and transmissions of LF and VLF signals are available. These programs are designed to extract signals from a very noisy reception environment and can enable signals to be received that would be inaudible to the ear. Software for reception and transmission of LF and VLF signals can be

downloaded from a number of web sites, see reference 4 for details. These programs are discussed in a later section.

Receivers

It is relatively easy to build LF receivers and transmitters. Such equipment does not require sophisticated test equipment to get going, however there are some subtleties to designing such equipment. In important fact to consider is the receiver dynamic range as weak and strong signals can be very close together. Avoiding inter-modulation depends upon the ability of the receiver to handle strong and weak signals at the same time.

A number of LF converters, loop antennae and transmitters have been described in Amateur Radio magazine; reference 3 lists some of these. These articles show the 'state of the art' for home made LF equipment, and indicate what is possible to build. Some operators make use of Selective Level Meters that were formerly used for long line carrier systems. Such instruments make sensitive and stable receivers.

Antennas

A suitable antenna is critical for reception of LF and VLF signals. For amateurs, there are two that are commonly used:

- The loop antenna.
- The active whip.

Loop antennae offer the advantage of being able to maximise signal strength or null out noise by rotation. However loop antennae need to be tuned for best efficiency.

An active whip antenna consists of a vertical rod, typically 0.5m to 5m long, with a low-noise amplifier at the antenna base. This type of antenna does not require tuning, however it can be more susceptible to electrical noise than the loop antenna. As I live in an electrically quiet location I chose to use the simpler whip type antenna 4 metres in length.

From reference 5, p 228, the radiation resistance of a short vertical antenna over a perfectly conducting ground is given by:

$$R_r = 40 \pi^2 (h/\lambda)^2$$

And its capacitance (in pF) is given by:

$$C_a = 24.2 h / (\log(2h/a) - 0.7353)$$

Where h = The antenna height (m)

λ = The operational wavelength (m)

a = The whip diameter (m)

While the above assumes a perfect ground, which is not usually the case, the values obtained are indicative of the true electrical parameters. Thus a four meter whip, with a diameter of 10mm, at 200 kHz ($\lambda = 1500$ m) appears as a

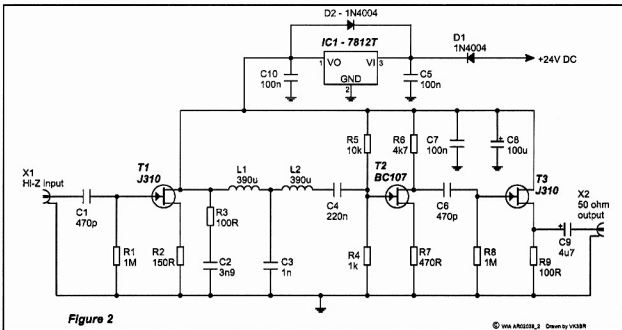


Figure 2. A pre-amplifier suitable for low frequency active whip antenna.

0.0028 ohm resistor in series with 44.6 pF capacitor.

It can be seen that the equivalent circuit of the whip is a low value resistance in series with a small value capacitor. Thus some sort of impedance matching and pre-amplification is required. An amplifier with a 50 ohm input impedance would 'short' out the signal from the antenna, so high input impedance is required.

A suitable circuit is shown in figure 2. The input stage (T1) is a source follower and its' input resistor, R1, sets the input impedance. The source follower then feeds a low pass filter with a cutoff frequency of 400 kHz so that strong medium wave broadcast stations are significantly attenuated, thus reducing inter-modulation effects. Figure 3 shows the measured frequency response of the unit. A small amount of voltage gain is provided by T2, T3 provides a low impedance output for driving a coaxial cable. The circuit should be mounted at the base of the whip antenna for best results. The overall voltage gain is about 2 or 6db, however the power gain is very high and the circuit is very effective when used with a whip antenna.

With this pre-amplifier, my receiver is capable of receiving LF signals from Japan, America, New Zealand and many parts of Australia. It has very good strong signal capability and does not suffer from any inter-modulation effects from strong NDBs or medium wave transmitters. The unit was built using point-to-point wiring on a length of tag strip and is housed in a small die cast box, which is mounted at the base of the whip antenna.

Unwanted Noise pickup

As noise pickup can be a serious problem at low frequencies the pre-amplifier and antenna can be placed some distance from noise sources so that noise pickup is minimised.

Most computers generate considerable radio frequency interference at low and medium frequencies, so it will be necessary to implement some sort of noise control. I have found the following effective:

- Use a 240 Vac isolation transformer to power the PC and associated monitor.
- Use a separate earth for the radio equipment and computer equipment.

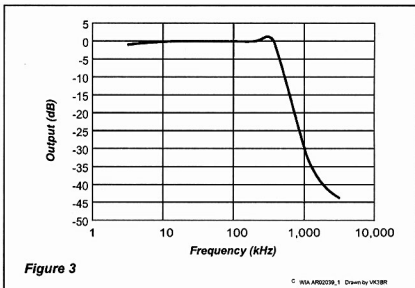


Figure 3

© WIA AR02039_1 Drawn by VK3BR

Figure 3. Frequency response of the pre-amplifier circuit.

- Supply power to the radio equipment through a high quality interference filter.
- Use an audio isolation transformer between the receiver output and the PC sound card.
- Some PC power supplies are much noisier than others so try swapping power supply modules if noise is severe.
- Build a screened box (Faraday cage) to house the PC, and fit RFI filters or chokes to all cables into and out the box.
- Try changing display settings if the VDU causes interference on desired frequencies.
- If buying a computer, select a unit that is well screened. 'Name brands' usually generate much less Radio Frequency Interference than cheaper types.
- Spectran (as above)
- Spectrogram (by R. S. Horne)
- Spectrum Lab (by DL4YHF)

Each program offers the user some different facilities and ease of use. Argo is by far the simplest to use and offers the user preset controls for the popular modes. Spectran is very similar.

Spectrogram was one of the earliest of these programs and it started life as a general-purpose spectral analysis program. It is available in various versions, some of which are more suitable for radio applications than others. Spectrogram offers a convenient facility of being able to record the incoming audio as a wave (*.wav) file. The file can be later analysed or replayed much like a tape.

Spectrum Lab offers a huge range of options and settings; it also has a terminal mode for sending and receiving various modes. It's flexibility and power comes at the price of complexity and it takes some time to master. In addition, Spectrum Lab has a basic 'soft receiver' with which to experiment.

A mode of communications that is growing in popularity is QRSS or very slow Morse code transmissions. In this case, very slow means that each character can take ten minutes or more to send, as the dot length can be 120 seconds or more. Key-down transmits one frequency and key-up transmits a slightly different one. Figure 4 shows a typical display; note that the frequency

Software

Commercial and government LF broadcasters use all the common forms of modulations. Due to restrictions on power and bandwidth, amateurs have developed modulation schemes, which operate with very small bandwidths. This usually means some form of frequency shift keying and using spectral analysis to extract the signal. Several programs are available to the amateur:

- Argo (by I2PHD & IK2CZL)

spectrum is graphed against time.

What advantage does this mode offer? It means that the transmission occupies a very narrow bandwidth, typically 0.4 Hz, and that the signal can be inaudible, yet receivable using appropriate software. The very slow transmission speed means that the usual aural mode of receiving the Morse code is not practical so that some sort of computer assistance is required. The programs listed above provide that assistance.

Note the very narrow bandwidth as shown by the vertical scale. The narrow bandwidth means that the receiver frequency stability must be very good, excessive frequency drift can cause the signal to quickly drift out of the display range.

A variation of the above display is where the time axis is vertical and frequency is horizontal. In this case, the display is known as a 'waterfall' display. These programs are useful anywhere that very weak signals are received, so these techniques have also been used in EME and HF QRP communications.

These programs can be used to receive ordinary Morse code as well and are especially useful where a number of stations are transmitting on closely adjacent frequencies.

The soft receiver

The idea of a 'soft receiver' has recently been developed. This idea does away with the usual concept of a receiver and instead substitutes a computer, a Sound Blaster card and spectral analysis software which act as a simple receiver.

The radio signal is connected to the microphone input of the Sound Blaster. Spectrum Lab contains an interesting soft receiver that demonstrates the idea. The receiver covers the range from DC to 22 kHz and allows the user to tune to a specified frequency and listen to the signal. An adjustable band pass filter is also provided. It's an interesting experience to see the spectrum on the screen and be able to move the cursor to a signal of interest and hear it - and it's all done in software!

The receiver is tuned by moving the small diamond shaped cursor on the frequency scale. The signal may also be heard via the sound blaster card. An adjustable band pass filter is available to help extract signals from the noise. The receiver is set to 14.8 kHz, at the time a navigation signal was heard from Russia. In figure 7, the signal can be seen as a series of pulses.

The continuous lines at approximately 13, 18 and 20 kHz are naval radio transmissions. The thin line near 16 kHz is interference from the 15625 Hz TV line frequency. The slow pulse groups at approximately 10 and 15 kHz are VLF navigation signals originating from Russia. The yellow lines right at the bottom of the display are from the 50 Hz mains and it's first few harmonics. This image was recorded by connecting the four metre whip antenna and pre-amplifier to the microphone input of the Sound Blaster card in the PC - very basic soft receiver.

Conclusion

Low frequency transmission and reception are a fruitful area for amateur experimentation and many operators through out the world are enjoying developing and exploiting new techniques of communications. Long range communications are possible using relatively simple equipment in conjunction with sophisticated signal processing software. Hopefully Australian amateur operators will soon have transmit privileges and will be able to take part developing in two-way communications using a very interesting part of the radio spectrum.

References and further information:

- (1) *Early Radio - In Marconi's footsteps*, Peter R Jensen.
- (2) *From the Wireless to the Web*, Peter R Jensen.
- (3) *Amateur Radio LF articles*:
Sones G, *Active Door Loop Receive Antenna*, October 2001.
Rogers R, *A Low Frequency Beacon Transmitter*, February 2001.
Butler L, *The Active Loop Converter at VLF*, January 2001.
Butler L, *Antenna Noise and Signal Canceling at LF*, December 2000.
Butler L, *A HF to LF Transmit Frequency Converter*, November 2000.
Butler L, *An Active Loop Converter for the LF Bands*, July 2000.

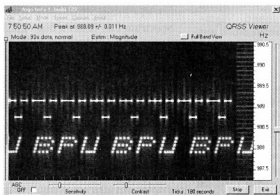


Figure 4. Argo display of QRSS (upper trace) and multi-frequency Hellschreiber (lower trace). Image courtesy of ZL1BPU.

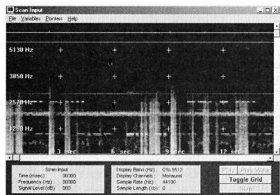


Figure 5. A Spectrogram screen capture of a number NDB's transmitting their call signs. BN (Brisbane, QLD) over WYY (Wynyard, TAS) on 302 kHz and GTH(Griffith, NSW) on 305 kHz are clearly visible.

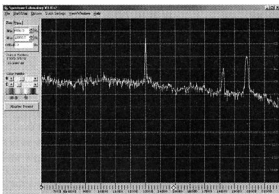


Figure 6. Spectrum Lab Soft Receiver front panel.

Diamond D, *LF Receiving Converter with Loop-stick Antenna*, May 2000.

Butler L, *An experimental Low Frequency Band Transmitter*, February 2000.

Butler L, *An LF Antenna Bridge*, October 1998.

(4) Useful LF web sites:

Argo and Spectran software can be downloaded from:

<http://www.weaksignals.com/>

Spectrogram can be obtained from:

<http://www.monumental/rshorne/gram.html>

Spectrum lab can be downloaded from:

<http://www.qsl.net/dl4yhf/>
Wave files of various transmission modes can be found at:

<http://marconi.careless.net/hadarc/digsound.html>

This is useful in identifying particular signal types and sources. A wide range of Sound Blaster programs for various modes of reception and transmission can be

found at:
<http://www.muenster.de/~welp/>

sb.htm

Long Wave Club of America web page contains much long wave information, articles and links to other LF sites:

<http://www.lwca.org/>

WWVB time signal information can be found at:

<http://www.boulder.nist.gov/timefreq/stations/wwvb.htm>

JJY time signal information (in Japanese only) can be found at:

<http://jjy.crl.go.jp/JJY-pamp/jjy.html>

(5) *Communications Receivers, DSP, Software Radios, and Design*, Ulrich Rohde and Jerry Whitaker.

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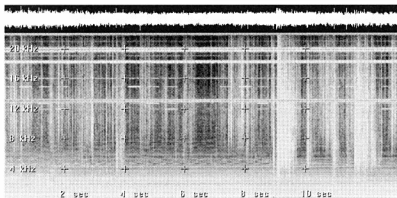


Figure 7. VLF signals between 0 and 22 kHz, seen using Spectrogram. This image was created using the Spectrogram screen capture facility.

Silent Key

Joseph Nelson VK2KJN

Joe Nelson passed away on May 16th, 2003 in hospital after a long illness. He was 76.

He loved radio and in his boyhood days he built crystal and valve sets as a hobby. In his retirement, he qualified as an Amateur in 1996, after doing courses with the Hornsby Club, HADARC, of which he was a member.

He operated on HF and was a revered participant in Col's Net, talking each weekday to other amateurs living in different parts of Australia. He met each month with the Amateur "Vets" at WIA House, Parramatta, enjoying the company of other "hams" over lunch.

For many years, Joe worked as shift foreman electrician at Lysaghts Wire Plant at Fivedock in Sydney, but did his training and apprenticeship in Melbourne.

Joe helped at the Volunteer Coastal Patrol Radio Centre at Terry Hills, doing his weekly early morning shift. A highlight of his retirement was his participation as a volunteer at the Sydney Olympic Games. He worked in the "Communications Centre" in an organising role and continued in the same way during the following Para-Olympics.

He loved fishing and swimming, doing laps at the Ryde-Eastwood Gym, Pool, sometimes three times a week. He was an avid follower of AFL Football. He was a gentle and kind man, always ready to help others. He leaves a fine family, his wife Joyce, daughter Sue, and three sons, Jim, Peter and Bill.

Joe will be missed by his many friends and we extend our sympathy to his family.

Submitted by John Stacy VK2JJS

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Lesotho 7P8 DXpedition

—July 18-25 2003

Tom Anderson, WW5L

Three Texans and one Canadian will comprise the operators of a major week-long DXpedition to Lesotho (7P8) July 18-25, under the aegis of the Texas DX Society and the Lone Star DX Association.

The operation will be an all mode, all band operation. "We hope to have at least one station on the air 24 hours a day," said Charles Frost, K5LBU, of Missouri City TX, vice-president of the Texas DX Society. "Two of our operators are excellent SSB operators and the other two are specialists in CW and the digital modes," he added.

Team members will be at the Hotel Mount Maluti (<http://www.seelesotho.com/mountmaluti.htm>) near Mohale's Hoek (30.16 S and 27.48 E). Equipment includes Tribanders for 10-15-20, a 2 element WARC Band antenna, a Tennadyne T-6 LPG, and Alpha Delta 40/80/160 dipoles. Kenwood TS850S, ICOM 706MKIIG, plus 600 W and 1 KW amps. The equipment is already in country.

QSLs will be handled by each operator separately via their home calls as each will have their own 7P8 call.

Team members include:

Charles F. "Frosty" Frost, 7P8CF/K5LBU, (<http://www.k5lbu.com>) of Missouri City TX a long time Texas and

world class DXer earning DXCC from more than 15 countries where he has operated since first becoming licensed at age 18 in 1960. A daughter, **Elizabeth White, is KA2UCA/3DA0EW/7P8EW** and is expected to accompany the 7P8 DXpedition in July.

Frost, who is vice-president of the Texas DX Society, has held the following calls or guest operated from the following DX stations: 9G1LL - GHANA; K5LBU/ST0 - SUDAN; K5LBU/5Z4 - KENYA; K5LBU/TJ - CAMEROON; K5LBU/OA - PERU; K5LBU/6Y5 - JAMAICA; HZ1AB - SAUDI ARABIA; 9J2CF - ZAMBIA; 9L1CF - SIERRA LEONE; VK4CBU - AUSTRALIA; 3DA0CF - SWAZILAND; ZS6/K5LBU SOUTH AFRICA; SU1ER - EGYPT; 7P8CF - LESOTHO; and is planning on a C91 - Mozambique operation later this year. He is a graduate of Texas A&M University's Institute of Electronic Science. He formerly worked in LTV's Electronic Warfare division in Garland TX and also at Galaxy Electronics in Iowa for several years. In 1979 became member of Jungle Aviation and Radio Service (JAARS) which is part of Wickcliffe Bible Translators and went to Ghana to install new antennas and received the call of 9G1LL among his many African call signs. He came back to Texas in 1983 to Houston and owned a ham radio store there several years before returning in 1990 to Zambia 2 years and in 1993 to Sierra Leone for 2 years. He is currently a middle school industrial education teacher in Missouri City TX, where he installed a ham station at Olle Middle School (call sign K5OMS), which places annually in the ARRL's school roundup contest. He is also a member of 10-10 International.

Madison Jones, W5MJ/7P8MJ, is president of the Texas DX Society (<http://www.tdxs.net/>), and first started building Heathkits in 1953 and built his first transceiver from a schematic in 1959. His father used to run spark gap transmitters in California in the early

1920s. He is an avid CW single and multi-op contester and has 220 DXCC countries confirmed. He has previously operated as KA5T, XE2FU, XE2KB, XE2Y and 6D2YFM.

Neil King VA7DX/7P8NK was first licensed in 1979 as VE7CVM, and is an active CW DXer and QRP'er particularly on 30m. His home station includes a Cubex Mantis II 4L5B at 20m. Runs 2 el on 30 and 40m, 4 el on 10, 12, 15, 17 and 20. Also a 4 el 6m quad buried in the array. Rigs include TS930S, FT100MP, FT847, FT897, FT100D and FT817. Amps include SB221 and Acom 2000. He is also a VHF/UHF mountaintop contester. He is a member of Radio Amateurs Canada and treasurer of the Coquitlam Amateur Radio Emergency Services Society (VE7SCC). He has operated from 4U1ITU, KH6, and as SV1IS and VK4CAZ. He is an internet technology consultant.

Tom Anderson WW5L/7P8TA has also held the calls V31EF (Belize) and G0/WW5L (UK). He is currently vice president and information director of the Lone Star DX Association (<http://www.dxe.org/lsdxa>). He has 335 DXCC countries confirmed and has 5BDXCC + 17m DXCC and is nearing completion of 12m DXCC. In 1997 he was a member of the K2BSA operating staff and radio merit badge counselor at the Boy Scouts of America National Jamboree. He is also an active storm chaser. Anderson is a former newspaper reporter and editor and is currently a free lance writer. Anderson is also a member of 10-10 International.

Andre van Wyck, ZS6WPX, is the on-scene coordinator of the DXpedition.

QSLs should be sent via each operator's home call. A web page will be announced later.

For additional information contact Charles Frost K5LBU frosty1@pdq.net or Tom Anderson, WW5L, WW5L@gte.net.

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ALARA Contest

The Silent Service

David A. Pilley VK2AYD
davpil@midcoast.com.au

While travelling north recently, I stopped by the Museum at SURAT on the Carnarvon Highway of Queensland. Although mostly dedicated to Cobb & Co., there was a small interesting display of WWII memorabilia such as letters to home from the lads at the front. The display that caught my eye was headed "New Zealand DX Club". It was a certificate style letter, somewhat faded and enclosed in plastic that made it hard to photograph. However all the words were readable. This led me on a research trail that took me, via e-mail to Jim Meachen ZL2BHF, who referred me to Barry Williams ZL1ACZ, who passed me to the master, Jack Fox ZL4ND who is the NZ Radio DX League Patron and a Life Member, to a web site www.radiodx.com. This is Jack Fox's story:

During WW II the New Zealand DX Club (now known as the New Zealand Radio DX League) were responsible for bringing hope to thousands of Australian and New Zealand families of Prisoners of War in both Europe and the Far East.

These Dxers monitored enemy short-wave broadcasts to pick up names and messages of Australian and New Zealand servicemen as well as civilians who were prisoners. The messages they received were then sent to the next-of-kin given in the broadcast. This led to the formation of the club's "Prisoner of War Monitoring Service" led by a prominent Dxer, the late Arthur Cushen, of Invercargill. By war end an estimate of 6,000 messages had been mailed to families in Australasia. Arthur Cushen became the centre point for pooling reports from other Dxers who created a network of listeners. However as the war progressed, more and more listeners were called into the Services and the weight fell squarely on the shoulders of Arthur.

Jack Fox was one of the listeners who were conscripted into the Services. Firstly in the Army and then later in the RNZAF signals where he was fortunate to be able to assist with monitoring from various locations within New Zealand and in the South Pacific.

One of the problems Jack experienced was the difficulty copying addresses broadcast by the Germans, Italians and the Japanese who had great difficulty trying to pronounce Maori and some Australian names. In those days there were no such technologies as tape recorders and everything had to be recorded by hand. If you didn't get it right the first time there was no second chance. In many cases the receiver was just an ordinary household radio.

During the Italian campaign it was not uncommon to receive messages from men

recently captured and to pass them on to the relatives before they were reported missing by the N.Z. Government. This was the result of monitoring a German station known as Radio Debunk. The Germans and Italians provided a good service with names and messages soon after internment, however the Japanese were not so fast and often two years elapsed before a message was received, especially with civilian internees in Singapore.

At the height of the monitoring service, signals were being checked from Berlin, Rome, Warsaw, Tokyo, Shanghai, Peking, Bangkok, Penang, Singapore, Manila and Batavia.

Messages for New Zealand that had been received in Europe, either from broadcasts or via the Red Cross, were sent by telex to N.Z. A typical message would read:

"From Cpl J. Doe POW 12345 Stalag 7A

*To Mrs J. Doe 1 Some St W Auckland
Text Am fit and well miss you love Joe"*

Jack says there are hundreds of letters still on file from grateful relatives expressing their appreciation of the monitoring services to both them and the prisoners.

This "Silent Service" of Radio Amateurs, particularly Arthur Cushen, brought hope to thousands during a difficult and stressful times.

The message on the certificate reads as follows:

1944-45 Message number 1147

The N.Z. DX Club

*The voice of New Zealand Radio
Listeners*

*Prisoner of War and Monitoring
Division.*

*105 Princess Street, Invercargill
N.Z., March 24 1945.*

A radio message was broadcast over

Singapore Radio on March 21st 1945

Addressed to: Mr. J. P. McCallum, 23...Street, Ipswich Qld, from A.B. McCallum, a Prisoner of War at a Malayan camp.

The message was picked up by Jim Martin, a member of the New Zealand DX Club.

The full text of the message was
*"Am well, hope same at home, Geo
Muir and Ray Burrows all well;
Acknowledge this through Radio,
would like Red Cross parcels"
Yours sincerely, Arthur T. Cushen,
Official in Charge.*

Arthur Cushen was one of the world's leading Dxers and was the BBC's reception monitor for many years. With big broadcasts, such as the Queen's message, he was required to find the best frequencies for Australia and New Zealand. He broadcast every week from Radio Nederlands and also on the N.Z. national system.

(Jim Martin was a great Hockey player and at one time was the Printing Manager for Jack Fox).

The monitoring service did not just end with WW II. It was also used during the Korean War and proved so beneficial, that the United States Government commended them for the work they did. After the end of the war they received many requests from the US Army for details of a number of messages they had received concerning prisoners that were held by the Chinese and Koreans. Their volunteer work was a very valuable asset.

NZ DX CLUB - A wonderful service provided by Radio Amateurs that warrants acclamation and could be classified "above and beyond the call of duty".

If you have any information concerning this and other monitoring services, please email or write me.

ar

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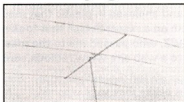
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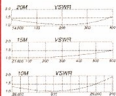
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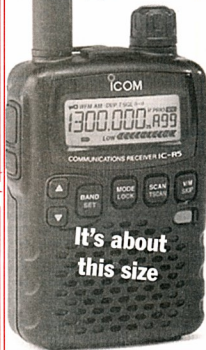
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Aerial experiments

Lindsay Lawless VK3ANJ.

Aerial experimenting is an interesting pastime and on a bright sunny day a welcome chance to spend time in the outdoors. Like all experiments it is necessary to collect the right apparatus. Suitable apparatus is available in most shacks and can be "home brewed" at small expense.

Experiments at wavelengths longer than 20 metres require clumsy apparatus, which is hard to transport and set up; so I mostly don't bother and confine modelling to the shorter waves; the results of modelling at wavelengths at or below 20 metres can provide information useful at the longer wavelengths. There is no shortage of good and reliable information about longer wave aerial experiments obtained by amateurs blessed with lots of space.

A stable signal source is essential and there is nothing better than the station transceiver, operated at about 5 watts or less, or operated into a combination dummy aerial and attenuator. An 8db π section attenuator uses 52 ohm as the input shunt element so paralleling resistors to raise the rating to say 5 watt would be ideal. A suitable lash up unit is described in the RSGB Rad Com handbook sixth edition section 5.50. I use the station stand by FT 707 for a HF signal source and for two metres I use a cast-off FT-2F.

For field work I use a 12 volt power source, a motor cycle battery of about 11 amp hour capacity housed in a cut-down oil container complete with carry handle and fitted with terminals for connecting to a charger and for connecting to the transceiver. For higher power field experiments I use a car battery housed in a standard container available from motor spares retailers.

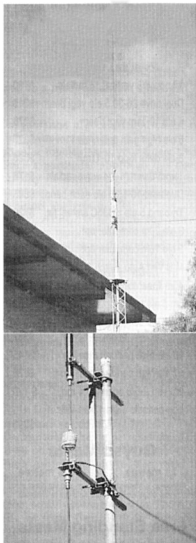
To raise the experimental models above ground a telescopic aluminium mast intended for use with caravans is ideal; these are available up to about 4 metre high. The CB type aerial insulators similar to DSE part D4056, modified to accept UHF type plugs and sockets and mounted to the mast with U bolts and Vee blocks provide the necessary fixing of verticals. For dipole experiments a centre fed wire strung between two telescopic masts serves. I also use a 2 metre GRP fishing pole (ex Tuna "skull dragger") as a mast extension for inverted V modeling. Another useful

platform is a cast off "phased array" TV aerial frame, these have integral V blocks and clamps for mast mounting and two or three horizontal arms for clamping verticals (see photo).

An SWR meter is essential, but it need not be an expensive modern all band model; a cheap CB type transmission line coupler type works OK for most measurements, if the potential inaccuracy is known and allowed for. To calibrate whatever meter is used make up parallel resistor combinations to provide about 10 watt loads of 50, 25 and 150 ohm. I find the SWR resistance bridge type similar to that described in the ARRL handbooks the most convenient; it has the advantage of restricting radiation to a non-interfering level. My version is designed for a maximum input of 10 watts and it serves as a dummy load and SWR meter for that power level.

A collection of suitable length terminated RG58 coaxial cable and one or two fused 12 volt leads and the apparatus is complete except for the aerial models. With that simple collection and a carefully planned method it is possible to construct and tune aerials for operation on 20 metre and shorter waves; the results provide information useful for the longer waves. Note the absence of grid dippers and similar devices. A dipper might be useful for some adjustments but the results can be misleading; it is best to adjust for a minimum SWR match. A field strength meter is useful for more sophisticated measurements and adjustments; there are suitable home brew examples in past issues of AR and other magazines and books; my unit couldn't be simpler, it might be the subject for a future paper.

The test site should be reasonably clear of obstructions for at least 180 degree, I use the front and back verandahs. The front has nearly 200 degree clear all the way to NZ and beyond. Both are conveniently close to



power points and other amenities, but don't be discouraged if there is nothing similar at your QTH, if necessary load all the apparatus into the car boot and head for the hills.

The photographs show a recently completed bottom loaded vertical for 20 metre. It uses one "radial" which is really the second leg of a vertical dipole. The bottom loading inductance is exactly as calculated from information in the ARRL antenna book 18th edition. It works well on DX via the long path to Europe; construction details might be the subject for a future paper.

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Andy VK3IV

May correction

May *Amateur Radio*, page 24, carried the figure for 'A Crossed Field Loop Antenna for 3.5 MHz'. Unfortunately the parts list which was part of the figure got separated and mislaid. The figure and parts list are printed below.

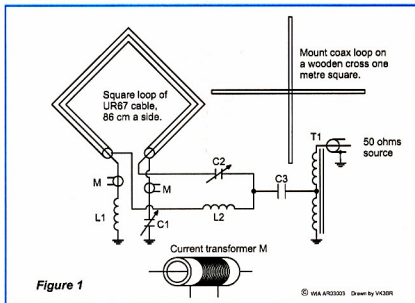


Figure 1. CFA Loop for 80 metres - Circuit Diagram

Component List

- L1 - 5.5uH, 22 turns, 2 cm diam, spaced 30 mm
- L2 - 5uH, 20 turns, 2 cm diam, spaced 27 mm
- C1, C2 - 180pF Variable Vane Type Trimmers (Screwdriver Set)
- C3 - 680 pF 500V Foil Type Mica
- T1 - 2:1 Toroidal Transformer (10 Turns Bifilar on 3 cm Toroidal Core)
- M, M - Current Transformers - Phasing Monitors for CRO.
Insulating Sleeve, outer diam - 9 mm,
Inner diam - 4 mm, length - 8mm,
Wire passes through centre of sleeve.
20 turns of light gauge wire wound around outside.

ERRATA: Editor denies moving to Victoria!

MARCH: Page 47

Table 2. System Impedance.	
Frequency (MHz)	Impedance (ohms)
75.75	6.8 + j343
2.2	135 - j37
10.14	67 - j12

MAY

Page 5 The Editor is still VK5UE.

Page 27 Bill Wells is VK4UA and in para 1 ZF2FG should be ZL2FG

Printed version corrupted.

Passive components at radio frequency

Pieter J. Kriel

For those who are still designing their own circuits - especially at higher frequencies extending into the GHz region, the last few years have seen a shift away from the *Black Magic* approach to a more scientific approach using reliable CAE programs. These programs are however still relatively expensive.

Nevertheless, knowledge about the parasitic non-ideal behavior of components coupled with low cost (sometimes no-cost) CAE programs can still produce effective design that approaches the accuracy of the more accurate and expensive programs.

In this article we look at a few components to illustrate the usefulness of this approach and hopefully reduce some of the mystique surrounding RF design.

The CAE Packages

There are currently many non-commercial CAE packages available for the PC. However, for the purposes of this article we will concentrate on two. The first is APCAD available from Hewlett-Packard (1). APCAD is a desktop RF calculator with many useful functions. The most useful of which is a two-port analyzer that can display swept results up to 18GHz in both tabular S-Parameter form or graphical form. The second is PUFF available from CIT (2) for a nominal fee well below \$50.00. An excellent investment by any standard. PUFF was developed to teach advanced students concepts surrounding microwave design and it will display four-port results in X-Y and Smith-Chart form. Readers should not be put off by the presence of the Smith chart - this program is extremely useful for the designer moving up from APCAD towards the commercial CAE world.

Both of these programs are DOS based but they run equally well under Windows when configured correctly and their usefulness far outweighs any inherent drawbacks due to their DOS heritage.

S-Parameter Design.

If available, S-Parameter data should always be used for best results. Both APCAD and PUFF will use S-

parameter data and this takes all the guesswork out of the component characteristics. In recent years many manufacturers have started to provide S-parameter data in electronic form.

A complete treatment of S-parameter design is outside the scope of this article but for those not yet familiar with it, application note 95-1 from Hewlett-Packard and AN-215A from Motorola provides excellent treatment of the subject. Briefly, S-parameter data consists of measurement data that accurately represents a component at particular frequencies and if S-parameters are not available for a particular component, it is probably not intended for use at high frequencies and readers should be cautious about incorporating them into an ongoing design.

Non S-Parameter Design

What does one do when S-Parameters are not available and the show must go on? Then one uses an educated guess. This is not as bad as it may at first appear. RF Designers has been doing it successfully for many years before S-Parameters became freely available and we are still forced to do so in the case of large signal design for active devices such as power transistors. S-Parameter data is obtained under small signal level conditions and remain valid for passive components under large signal conditions, but for large signal active devices, as a rule S-Parameters are not available due to practical measurement difficulties. However, manufacturers will normally supply input and output impedances of their transistors thus enabling the designer to easily design external matching networks.

CAE packages are particularly useful for just such an occasion. APCAD has

for instance a section dedicated to impedance matching with the most popular topologies at your finger tips. Once a particular approach has been initially validated using this facility, the next step is to plug the values into the two-port analysis or alternatively use PUFF. APCAD is good for lower frequency work where some parasitics can be ignored or easily modeled whilst PUFF provides the extra flexibility where all parasitics need to be incorporated and the resultant model tends to become quite complex.

Design Example

To illustrate some of the points we will take a fairly simple design example.

The requirement is for an output network to match an MRF1946 Power transistor to a 50 ohm load.

The Data sheet lists the device output impedance as $2.3 - j0.40$ at 150MHz. This low impedance has to be transformed up to 50 ohms by a factor of roughly 25. Such a high transformation ratio is normally achieved by cascading two second order sections, each contributing about equally to the total ratio. This also allows some flexibility in choosing values close to standard numbers as well as allowing for bandwidth spreading through stagger tuning. For simplicity we will confine ourselves to the single frequency case - in this instance 150MHz.

Using APCAD we obtain an L-Section match to take us from $2.3-j0.4$ to $10+j0.0$. The match can be realised in either a low or high pass form. We choose the low Pass form for two reasons: First, this will reduce the harmonic content significantly and secondly, we can incorporate the parasitic (Inherent) inductance of the transistor collector lead into the series matching inductance.

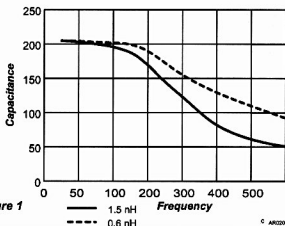


Figure 1

Figure 1 Effect of Lead Inductance on Capacitance

Next we turn our attention to the capacitance required. In power amplifier design two types of capacitor are predominantly used. The leaded mica/metal type which has about 1.5nH lead inductance and porcelain chip capacitors with about 0.6nH inductance. This parasitic inductance has an effect on the effective capacitance and must be taken into consideration. A first order approach is to calculate the effective capacitance using the following formula:

$$C_{eff} = \frac{C}{1 + [(2\pi f)^2 LC \cdot 10^{-9}]}$$

Where

C = Marked Capacity of Capacitor in pF

C_{eff} = Effective Capacity in pF resulting due to the effect of lead inductance.

L = Parasitic Inductance in nH

f = Frequency in MHz

Figure 1 shows the effect of inductance on capacitance.

This procedure can be tedious even with the help of a spreadsheet. A better solution is to use a CAE program like PUFF and model the capacitance with its appropriate parasitic inductance. This way any change can be observed directly in terms of effect and adjustments made even before the prototype is assembled. Smaller changes will then be required and time spent tweaking the circuit significantly reduced.

The results in Fig. 1 illustrate just how important parasitic effects are and as the curve shows, even high quality low inductance chip capacitors are no longer accurately modeled in the UHF region without incorporating its parasitics.

Next we focus on the inductors.

Normally we would wind an inductor using enameled wire and estimate its parameters using coil winding data contained in published tables. Then after we have built the prototype we spend some time tweaking it for best results. The problems usually arises when we attempt to obtain repeatable results within the manufacturing environment.

At UHF this problem is often alleviated by the use of printed inductors. Printed inductors are very repeatable and cost effective should space allow. The problem of parasitic capacitance is also eliminated. Even at VHF frequencies we often find it practical to implement printed inductors.

Using our current design we use PUFF to fine tune the design with both matching sections in place using ideal inductors. Once satisfied with the design we substitute one inductor at a time with a printed transmission line section, fine tuning the length and impedance to equal or better the performance of the ideal inductor.

At VHF some compromise might be required to reduce the length required. Normally for maximum efficiency we would choose a low impedance section which results in a wider (more copper) but also longer section. By choosing a higher impedance line section we can reduce the required length significantly although we lose some efficiency due to the narrow line's increased resistivity.

A first guess normally starts you on your way and after only two or three iterations, the final results will start to emerge. In this case we chose a line width of 5.5mm which matches the collector tab width resulting in a 32 ohm line 21mm long for the first inductance. To minimize length we chose a compromise impedance of 75 ohm for the second inductor which is 1.3mm wide and 47mm long. On long line lengths it is often possible to use a u-shape line in order to conserve space. We can also minimize resistive losses through the use of thicker copper plating (2 oz vs. 1oz) The board material used is standard G10 or FR4 epoxy glass which is effective up to 1GHz. Figure 2 visualizes the concept employed.

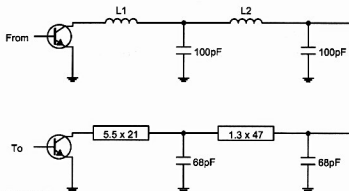


Figure 2

© AR02038_2 Drawn by VK3BR

Figure 2 Inductors Replaced with Printed Transmission Line Sections.

continued next page

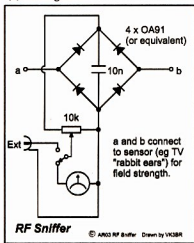
Measuring Aerial Field Strength

Lindsay Lawless VK3ANJ

Aerial field strength measurement is useful for tuning models to resonance, for comparing performance and plotting field patterns. Sophisticated equipment is not required for these purposes, the collection of apparatus in the picture is adequate for aerials of 20 metre or less

The apparatus left to right in the photograph is

- TV indoor "rabbit ear" aerial with about one metre 300 ohm ribbon for connecting to (b).
- RF sniffer with internal one mA meter and provision for switching to an external microammeter circuit at Fig.1.
- Multimeter or separate microammeter
- Electronic millivoltmeter.
- Field glasses.



The heart of the collection is item (b) the RF sniffer which serves also, with special attachments, as an absorption wavemeter, a line current meter and GP RF detector. The integral one milliamp meter is best for high level measurements, if higher sensitivity is required the 0 to 1 volt or 0 to 50 mA scale of an analogue multimeter can be used in the external mode; alternatively the 0 to 200 millivolt scale of a digital meter or an external large scale microammeter.

Item (d) is an electronic analogue millivolt meter using the LM386

metering circuit included in Drew Dimond's FS meter described in August 1998 AR and also included in Drew's Milli watt/Watt power meter in AR April 2002. There are. Several other suitable circuits described in the literature but I find the 386 version the easiest to get going and with the advantage of requiring one only 9 V battery.

The field glasses are necessary if the sniffer meter or the external meter is remotely located and cannot be read by my old eyes, mounting them on a tripod is a good idea



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Passive Components at Radio Frequency continued Results

Transmission line inductors due to their distributed nature also results in slightly wider bandwidths (lower Q) and coupled with stagger tuning often eliminates the need for tuning over a wide bandwidth. The result is a cost effective repeatable and robust design suitable for mass production relatively untroubled by parasitic effects. The final design yielded 45W output with less than 0.6dB variation over the design bandwidth of 135 to 180MHz. Efficiency ranges from 61 to 75%.

Conclusion

This brief article demonstrates how effective design can be realised at higher frequencies using the simplest of tools and knowledge regarding component parasitics. For efficient and more complete design the high-end CAE packages certainly come into their own and we will no doubt find them becoming more affordable time passes. In the meantime it is perhaps a good idea to spend some time with the basics of component design and re-familiarize ourselves with the foundations of good design which are found in some of the lesser tools.

References

- APPCAD is available from Hewlett Packard. Usually at no charge to design engineers. Part Number HAPP-0001.
- PUFF is available from California Institute of Technology for around US\$20.00. They can be contacted at Puff Distribution, Electrical Engineering M/S 136-93, California Institute of Technology, Pasadena, CA 91125. See also the WebSite link on PKE's Homepage - The RF & Microwave Group at Caltech.

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Telegraphy is not dead!

5th IARU World Championship for High Speed Telegraphy. *IARU-News 474*

Vladimir Sidorov, EU1SA, President,

The Belarussian Federation of Radioamateurs and Radiosportsmen (BFRF)

IARU Member-Society

Extracts from the report

The 5th IARU World Championship for High Speed Telegraphy took place at a picturesque site of the sport complex "Raubichi", nearby Minsk, the capital of Belarus. Participants from 13 countries of the World took part in the Championship. Belarus presented two teams, the 2nd of them did not participate in the team competition.

The final Teams classification is as follows:

1.	Belarus-	1 5535.9 pts
2.	Russia	5092.9
3.	Romania	4087.8
(Not qualified)	Belarus-	2 3641.5
4.	Hungary	3205.9
5.	Czech Republic	2166.4
6.	Macedonia	2030.2
7.	Ukraine	1657.8
8.	Germany	822.4
9.	Bulgaria	741.5
10.	Lithuania	518.1
11.	Georgia	396.7
12.	Belgium	126.3
13.	Moldova	93.6.

96 medals gained by participants of the following countries:

	Golden	Silver	Bronze	Total
1. Belarus	21	7	7	35
2. Russia	6	13	7	26
3. Romania	1	6	7	13
4. Hungary	4	0	0	4
5. Macedonia	1	2	3	6
6. Ukraine	0	2	1	3
7. Bulgaria	0	2	1	3
8. Czechia	0	1	1	2

New World records were set up as follows:

Iryna Tsiatetskaya – two World records, in Reception and in Transmission of mixed texts accordingly

Denis Kostyrko, Russia – two World records in Practical exercises

Anastasia Lagoutsina – Practical exercises (pile-up, PED)

Tanja Azderska, Macedonia – Practical exercises (calls, RUFZ).

Andrei Bindasov, Belarus, has successfully performed an attempt to beat Guinness records for transmission of letters, numbers and mixed texts. The new respective records were set up for transmission of letters (271 digits per minute) and mixed texts (216 digits per minute).

For the first time in all HST World Championships there were implemented: - the monitoring of process of transmission and practicing tests, so that other participants and spectators can watch the process on large computer monitors installed in special halls and corridors. Instant computing of results of all kinds of competition,

since all computers used for competition were networked, the instant monitoring of the overall competition process, as the main monitor in the press-center was presenting results of every competitor and the frames with results were updated every 10 seconds. The above implementations made the competition very spectacular and accordingly the Championship attracted quite a number of visitors.

The Championship has attracted a substantial attention of local TV, radio and other media.

We would like to extend our appreciation to the IARU for granting Belarus the right to organize and perform the 5th IARU HST World Championship. We would like also to thank all participants of the Championship for their activity and enthusiasm which made the event a success.

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Cover photo

Ron Wilkinson Award 2003

The Ron Wilkinson Achievement Award has been presented to an achiever, and mentor for others, Doug McArthur VK3UM.

He was honestly surprised when told the news and delighted at receiving the award, which was personally presented to him in Melbourne by the WIA Federal President, Ernie Hocking VK1LK.

The award certificate citation states: "In recognition of creating a world-class moon-bounce station through personal determination that exemplifies the essence of the amateur radio spirit, and for an outstanding record of achievement in his chosen field of activity."

A previous winner of the award years ago, Doug had no knowledge that he had been nominated by two radio amateurs who made a submission to the WIA Victoria Council, which was endorsed and forwarded to WIA Federal.

Photo courtesy VK3 Division

Southern Cross Award

The Southern Cross Award is issued by the Eastern and Mountain District Radio Club Inc. to licensed amateurs and SWLs who confirm through the submission of a signed log the required number of contacts as follows:

- VK3 stations are required to work 15 financial Club members plus ONE of the Club Callsigns, VK3ER, VK3BNW, VK3COD or a Special Call run by the Club, e.g. VI3GP.
- DX and interstate stations require 5 contacts plus ONE of the Club Callsigns as above.

A member and/or Club callsign can only be claimed once per application. Contacts made on the Club Repeater VK3REC are legitimate. However, contacts with either Club members or a Club callsign during both the Wednesday night and Sunday morning Club nets are not eligible for the purpose of the Award. An applicant must submit a legible log showing the date, time, band (MHz), mode, callsign, and operator name of the station worked. The full name, address, callsign (except SWL) and signature of the applicant are required on the log.

Band or mode endorsements are available upon request.

The following fee is to accompany the application:

\$A5.00 if the log is handed in and the Award (framed) is collected at a Club Meeting.

\$A5.00 if posted within Australia.

\$US3.00 or 3 IRCs for DX stations.

Additional band or mode
endorsements - \$A1.00 for VK
stations and

\$US1.00 for DX stations.

Applications for the Southern Cross Award are to be forwarded to:

Awards Manager

EMDRC

P.O. Box 87

Mitcham Victoria

Australia 3132



Carl VK3EMF, President of EMDRC, holding the blank Award Certificate

**Log Sheet
for the
SOUTHERN CROSS AWARD
Eastern & Mountain District Radio Club Inc
P.O. Box 87 Mitcham Vic 3132**

Submitted by:

Operator Name

Address

Call Sign

Signature

[illegible]

Ham Shack Computers

Alan Gibbs VK6PG

223 Crimea Street, NORANDA WA 8062

Email: vk6pg@tpg.com.au

Part 26 – Linux for Amateurs

Only about 3% of the world's personal computers use Linux as the prime operating system, yet roughly 53% use Linux (and/or its derivatives such as UNIX) for professional networks and Internet servers. (7). Clearly, Microsoft Windows has the commanding share when it comes to the broad spectrum of computer users. Almost every new computer advert says that their PC systems "...come with Windows XP pre-installed ready to go". Try finding a new computer with Linux pre-installed "...ready to go", or ask the sales staff which computer they can offer with Red Hat 8.1 or Mandrake 9.0 pre-installed? Their facial expressions are fascinating to watch. Most PC sales staff won't understand what you talking about. Conversely, the majority of Amateur Radio packet networks use Linux as the operating system and FBB as packet engines. Whilst the majority of Amateur Radio users still run Microsoft Windows, there's an increasing number who prefer Linux. So, what's all the fuss about, and is it really an option?

Open Source Code

Last month, the *OpenOffice Review* (Part 25) highlighted the huge cost savings and apparently seamless interchangeability between Microsoft Office and OpenOffice products. It's worth the effort many times over for business and consumers alike. Based upon open source code, Linux is free for experimenters to modify and improve applications provided their products and new source code is available to others. Conversely, Microsoft products and code is closed – hidden in the vaults of Microsoft Corporation and protected by copyright. If you want it, you have to pay a high price to Microsoft even though there might be bugs lurking inside their code! With Linux, it's free to use, with the bugs, but you are welcome to de-bug Linux and offer the solution to the world.

The UpSide

Overall cost savings on software.

Free of copyright and non-restricted use.

Plenty of free software on the Internet. Help from other RAs and hundreds of "HowTo's" online. Available on CD-ROMs. Choice of operating systems with increased stability. Multi-user environment and network functionality included. Firewall, anti-virus and a modern "look-and-feel". Both windowed and command line operation. Click and go environments. Free and easy plug-ins, regular upgrade options. Ideal business and educational solutions ... and that's just for starters.

The DownSide

Users must learn a new operating system from scratch. Newer Linux GUI releases are generally slower than Microsoft products. Difficult to obtain Linux operating system software except by mail order. Many different systems to choose from, and multiple releases of the same product. Some systems require specialised plug-ins to operate common software applications. Not all hardware is identified when installing unlike genuine Microsoft PnP devices. More difficult to install and configure for newcomers. HowTo's difficult to understand when looking for quick fixes. Far less AR related software available compared to MS Windows. Windows software will not work directly under Linux unless addition "conversion" software is added. Resource sharing with the wider community is more complex. Try sending a "filename.tar.gz" to a Windows friend and see how far you'll get. Linux maintenance tools are impossible to find quickly. Almost impossible to find a Linux beginner course at local colleges and universities. Mainstream retailers don't offer "boxed Linux packages" off the shelf to consumers. If it don't work – you have to fix it yourself. Don't expect your local dealer to bail you out!

It all seems daunting at first, but remember when you first started to use computers. DOS and Windows seemed impossible at first. The more you use and experiment with the Linux system, the more comfortable and productive things become. University IT students studying programming and the UNIX system find

Linux a natural progression. The commands are similar, and the systems are highly configurable. However, most RA computer users won't have the same background in programming but they are keen to learn.

In offering Linux to the wider community, recent developers have added Graphical User Interfaces (GUI's), easy installation, auto configure and hardware detection systems, a full set of Internet tools, and "Office Suites" making Linux a real competitor in the computing marketplace. In summary, the UpSide is easier and the DownSide is slowly shrinking with the march of time. With exceptional asking prices and crippling licence fees for proprietary software, the Microsoft Corporation could find some real competition that might cost them billions of Dollars in the world's computing marketplace.

Is Linux ready for the onslaught? Without doubt, Linux has the server, firewall, and router markets firmly in its grips. However, business communities are seriously looking at Microsoft alternatives, but the hearts and minds of the home computer market have yet to be targeted. RA's have the advantage of getting in on the ground floor because Linux is already there in growing numbers.

What's Available? (6)

- Xandros (www.xandros.com)

Based upon Debian, Xandros has become the best stable Linux derivative, and has the capacity to run Windows software with the same look-feel being ideal for MS converts.

US\$99. No free download.

- Debian (www.debian.org)

For experienced Linux users, highly configurable and very stable. Not easy to use but this won't worry the guru's who like command line power.

Free download.

- Gentoo (www.gentoo.org)

Rough going to install but smallest system with a minimalist approach (16Mb) being quick to download. Ideal for small-dedicated systems. Some applications must be added. Free download.

- Lindows (www.lindows.com)

Some say this is Windows on a Linux kernel. Click-'n-run features like Windows but pending litigation with Microsoft! Being sold with new computers in the USA – but not for long!

US\$129. No free download.

- Lycoris (www.lycoris.com)

Touted as the "Windows XP version of Linux". Look for the deluxe version that includes OpenOffice. Very easy to use and compatible with MS Office.

US\$20 or free download.

- Mandrake (www.mandrake.com)

Delightful to install and available locally on CD's (2&3). From France but reported as being currently bankrupt (6). Widely used but future is doubtful unless taken over. Some minor bugs reported.

US\$30 or free download.

- Red Hat (www.redhat.com)

Widely used and trusted. Online update for registered users. Not as advanced as Mandrake, more development needed. A first class Red Hat printed manual.

Aus\$40, US\$30 or free download.

- Suse (www.suse.com)

German developed lacking step-by-step installation. Suse looks sleek and comes with excellent printed manuals. More development needed.

US\$40-80. No free download.

- Knoppix (www.knoppix.net)

Knoppix comes as a bootable CD-ROM and will run on a 486DX2/50 with 16Mb of RAM. Ideal if you want to try Linux but you can't install other applications.

Free download.

There are many other Linux systems and newer versions due later this year. But, which one should you try?

A Test Case

Having never seen or used Linux, the writer took the plunge and chose Mandrake version 9.0. Mobile racks were installed on networked Pentium 1/166 and Celeron 500/256 machines. A spare 4GB hard drive was selected as "a Linux Test Drive". In both machines, Mandrake installed flawlessly and identified the conglomerate of hardware including network cards, printers, and surprisingly parallel port external Zip drives. Whilst the Celeron was faster, the P1/166 seemed much slower than Windows 98SE. However, the P1/66 configured as a workstation and Internet station functioned delightfully with KDE as the launch platform. It even identified the networked Celeron/Windows XP and automatically configured the default IP/TCP gateway from the P1/166. The writer was on the Internet within one hour on the ham shack P1/166 using Kmail and Mozilla for browsing. Many hours of enjoyment followed when exploring the new Linux system, and the true extent of configuration became apparent. Almost everything can be styled from Icons, backgrounds, and screen savers. Great learning experience for a first time Linux user.

Amateur Radio Options

Adding packet radio was the first thought and LinPac seems commonly used around the traps. Several plug-in's are needed when installed to Mandrake. A quick Internet search found logging programs, contest resources, BBS software, PSK31, maps and GPS software – the list is still growing. The Internet offers chat rooms for like-minded RA Linux users, and packet users offer helpful advice for struggling new comers. The anomaly being that you need connectivity with a DOS/Windows system while experiments are being done on a separate Linux distribution. This can be difficult if readers opt for dual-boot systems with just one shack computer! That's why the writer has three networked computers in the shack. One old 486 dedicated to packet radio and DOS applications, the P1/166 does all the shack operations with Windows 98SE, and the Celeron/XP handles the Internet and office tasks. If anything "hits the fan", productivity and Amateur Radio remains operational at all times. Whichever system you choose, stay with FAT32 before considering Linux. Dual-boot with NTFS using XP is a disaster!

Summary

None of the Linux distributions tell you how to use Linux (2,3 &4) but the online (CD's) have plenty of HowTo's to get you started. Most computer users will have an intuitive idea and be operational within one quiet evening. Just follow the installation guide, insert critical information like the secret root password, username(s), password(s) and the like. Don't make root directory changes unless you have the right information. If you stay in the user directory you'll be safe to experiment.

So, which one should I choose?

Read last months Ham Shack Computers about OpenOffice and hunt for the APC Linux Pocketbook (4) – do some serious reading – then decide for yourself!

Ham Tip No. 26. Buy a "Mobile Rack" (5) to allow hard drives to be removed easily, or to swap between operating systems. If your Linux drive still needs work, swap back to the Windows drive and continue your shack activities, then back again to the Linux drive when time permits.

Ham Shack Computers, Part 27 – next month called "Home Brew" looks at building a brand new computer from scratch at a budget price – half the price you'd expect to pay at "emporiums". Ideal for proactive Radio Amateurs wishing to upgrade or just "get with it" in today's world!

(1) Ham Shack Computers Web:

<http://www2.tpg.com.au/users/vk6pg>

(2) *The Linux Minibook*. (3rd ed) IDG Communications. ISBN:0-9580627-7-3.

(3) *Operating in Linux*. (4th ed).

Next Publishing. ISBN. Not listed.

(4) *Linux Pocketbook*. (revised edition). APC Publishing. ISBN. 1-876587-18-0.

(5). Mobile Rack. (IDE/USB with internal fan) Jaycar Electronics XC-4670. \$25:00 each.

(6) *Linux Smackdown*. Australian Computer Magazine. April 2003. ISSN. 0745-4415 (pp 66-81).

(7) *The Lure of Linux*. Australian Computer Magazine. December 2002. ISSN. 0745-4415 (pp 118-124).

Written with Linux using Mandrake 9.0 and OpenOffice 1.1 Write on the P1/166. - Then converted to MS Word 97 ready to forward by email to the editor.

ar

Beyond Our Shores

David A. Pilley VK2AYD
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Middle East Iraqi Amateur Operation reported

Amateur Radio Newsline report Ham radio will hopefully re-emerge in Iraq now the war has ended. Y11DZ, is one of the primary operators at the Baghdad Radio Club Y11BGD station in Baghdad. He reported that just prior to the outbreak of hostilities in Iraq that he had dismantled the station. Daily D-X Editor Bernie McClenny, W3UR, says that he doubts there will be any activity in the near future from Y11BGD or any other Iraqi Amateur Radio station. The Y11BGD club station went on the air in the 1970s and the Iraqi Association for

Radio Amateurs remains an International Amateur Radio Union member-society. But further, the Daily D-X has reported that Jim KT4CK, of Tennessee, has been active from the Middle East on 15 meters SSB!! April 7, he was identifying as YI/KT4CK saying he was in the desert of Southern Iraq. The Daily DX says that K1XN, has confirmed that Dunkerton is—or has been—with the 101st Airborne. Meanwhile, The Daily DX says Ed Giorgadze, 4L4FN, now is in the Middle

East after wrapping up his North Korean (P5) operation. He has been in Turkey very close to the Turkish/Iraqi border for the last month and awaits his next UN World Food Program assignment—which could be inside war-torn Iraq. Keith Martin, EI4JM, will be stationed in YA, Afghanistan, for the next year. He is working with the aid agency Concern, looking after their HF communications and computer IT systems. He hopes to be QRV on the amateur frequencies once he gets his YA licence sorted out.

(Qnews)

Broad-band over power line

Broadband Over Power Line" (BPL) is a form of carrier-current technology typically known as power line communication (PLC). Whatever its name, the technology is raising serious interference concerns within the Amateur Radio community in the USA, since BPL would apply high-frequency RF to parts of the power grid. It poses a HF interference threat.

The U.S. FCC are proposing to invite public comment on the concept of using existing electrical power lines to deliver Internet and broadband service to homes and offices. ARRL Lab Supervisor, Ed Hare, W1RFI who chairs the PLC Work group of the IEEE said, "Entire

communities will be affected, so every amateur in that community could have part of the radiating system 'next door' on the power wiring on his or her street."

The so-called "access BPL" would use medium-voltage (1 kV to 40 kV) power lines to deliver Internet and broadband applications. Hare says access BPL is likely to be a more significant interference source than in-building PLC technology "because overhead electrical wiring is a much better antenna than the electrical wiring within a building." The new digital power line designs use multiple carriers spread over a wide frequency range—from 2 MHz up to 80

MHz—and capable of high data rates—up to 20 MB/s, the FCC said.

Tests of BPL are under way in several states, including Alabama, Maryland, Missouri, New York, Ohio, Pennsylvania and Virginia. Hare says ARRL Lab personnel will visit some of the test cities this spring to take field measurements to quantify the potential for interference to Amateur Radio operations.

We are keeping an eye on the progress here in Australia as many countries in Europe and elsewhere are considering similar systems.

(ARRL N/L)

From LF to Laser – new distance records claimed

Three British Amateurs have achieved the unusual feat of setting new UK distance records for bands at the opposite ends of the spectrum. G3GRO and G8LSD teamed up with G0MRF to set new distance records for 73kHz in the LF spectrum and for Laser communications at a wavelength of 670 nanometres.

On the 73kHz band contact was established from Ayr in Scotland to Lands End on the evening of April 1st. The distance covered was 610 kilometres.

Four days later G8LSD and G0MRF using Laser, spanned 49.3 kilometres between Dover and Fairlight. After three hours waiting for the atmosphere to clear

and precisely locating each other, calls and reports of 559 and 579 were finally exchanged. Both stations used modulated CW achieved by switching the laser on and off at 488Hz. When the lasers were aligned, even over nearly 50 kilometres, they were among the brightest objects on the horizon.

(GB2RS via APCNEWS)

Amateur radio is not dying!

On Tuesday, April 29, students of Dr. John Weiss, WB8KLO, of University of Wisconsin USA, Stout's College of Technology, Engineering and Management achieved another first, when 81 of them sat for and passed their

Federal Communications Commission technician class amateur radio license exam and received their amateur radio license grants within 24 hours of sitting for the exam. In so doing, the students became the largest test session yet that

has employed online submission of test results and applicant data to the FCC.

Weiss, an Associate Professor at UW-Stout, specializes in advanced telecommunications technology and teaches courses in Telecommunications

Administration, Policy & Regulation, Telephony and Networking. He is also an attorney and a member of the Federal Communications Bar Association as well as the American Radio Relay League. His wife, Diana is also a licensed ham operator.

Weiss gave his students the option of earning their radio licenses in partial fulfillment of class requirements. "This is a great way to broaden the experience of students in my Introduction to Telephony class," he said. "Students study FCC rules and regulations, basic radio communications technology, and proper operating procedure in order to earn their right to operate an amateur radio station."

"Students that do not own their own amateur radio equipment are able to use their new license grants immediately,

employing their laptops and a software program called EchoLink that links amateur radio stations around the world using new voice over IP technology."

"Earning their license gives them something else to put on their resume and, for some, it will serve as an introduction to a life long passion. Some of the newly licensed students are already on the air operating."

The rapid license grants were made possible by using newly available VEC-to-FCC electronic submission technology developed by the W5YI volunteer examination coordinator. While students were waiting for their test results, they were treated to pizza by the examining team, which helped ease the anxiety of waiting for scores. At the end of the night, many smiles were seen on the faces of the large

number of successful candidates.

Using password-protected electronic forms posted to the W5YI-VEC website, John Burningham, WB8PUF began keying in the test results right after the exam session and all 81 applications were waiting at the VEC Office when they opened the following morning. After routine screening, all applications were electronically retransmitted to the FCC. Within an hour, the FCC issued the licenses and call signs which were immediately forwarded over the Internet to Burningham.

The 21st Century is here! YES 81 new Radio Amateurs licenced and all students.

Well done UW.

If you have news of Amateur Radio happenings around the world, please share them with us.

BF

Cable and Connectors

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- | | |
|--|--------------------|
| ● RG58C/U Belden 8259 | @ \$0.90 per metre |
| ● RG213/U Belden 8267 | @ \$4.45 per metre |
| ● RG8/U Belden 9913 Low Loss | @ \$5.15 per metre |
| ● RG8/U Belden 9913F7 High Flex Low Loss | @ \$5.55 per metre |
| ● RG8/U - RF400 Belden 7810 Low Loss Sweep Tested to 6000MHz | @ \$6.30 per metre |

LINK

- | | |
|--------------------------------------|----------------|
| ● RG58: B80-006 UHF connector (M) | @ \$7.65 each |
| ● RG8/213: B80-001 UHF connector (M) | @ \$8.80 each |
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Technical Abstracts

Gil Sones VK3AUI

30 Moore Street, Box Hill South Vic, 3128

Adding a Crowbar

A crowbar is a circuit which protects your transceiver from excessive voltage if your mains operated power supply should suffer a component failure. A design which could be fitted to an existing power supply appeared in the *In Practice* column of Ian White G3SEK in *RadCom*, January 2003.

The design is intended for a typical transceiver power supply and uses a thyristor to blow a 20 amp fuse. This requires a thyristor, or SCR, which has a sufficient surge rating to handle the current needed to blow the 20 amp fuse. This is much more than the 20 amp the fuse can carry without blowing. A 30 amp thyristor with a surge rating over 500 amp is used.

The fuse blowing current is found from the I²T rating of the fuse and this determines the current which must be carried by the thyristor. The current is much higher than the carrying current rating of the fuse and the high current blows the fuse in a short time.

A typical power supply circuit is shown in Fig 1. The crowbar circuit is connected between A and B and to point C, the +ve output, and to the -ve output rail. The crowbar circuit is shown in Fig 2. Another addition which may be worthwhile would be a diode connected between the +ve output, C, and the regulator input, B, to protect the regulator circuitry from a discharge path from any capacitors on the output lead when the thyristor TH1 fires. This diode is D1 shown added in Fig 1.

The fuse used, F1, 20 A, is a small automotive blade type. These are small and small holders are available. The thyristor is a 30 amp plastic type, BTW69200, which was obtained from Farnell, part No 251940. Other equivalent thyristors or SCRs could be used. A heatsink is not used as the current which blows the fuse only flows for a very short time. Zener diode ZD1 is a 15 V 0.5 W type such as BZY88C15 or BZX55C15 or equivalent. The diode

D1 needs a surge rating which may approach that of TH1 if the output DC line has large bypass capacitors across it either in the power supply or in the transceiver.

D1 could be one of the heavy duty diodes which you might find at a hamfest or you could use a diode in a diode bridge. Resistor R2 is included to provide a bleed for the power supply filter capacitor C1. The whole circuit can be built quite small and included in your power supply.

You can test the operation of the circuit by using a resistor in place of F1 and temporarily connecting ZD1 to a variable voltage source. Then, when you know the circuit triggers, use the fuse in F1 and see if the circuit will blow F1 when the voltage applied to ZD1 reaches the trigger voltage. You will also know then if TH1 is big enough. You can check this by conducting a second test with F1 replaced by a resistor. If all is well you have a crowbar protected power source for your transceiver.

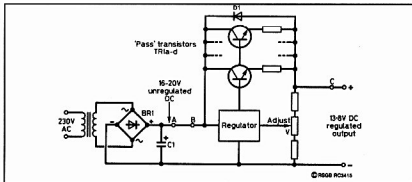


Fig 1. Typical transceiver power supply. Diode D1 is added to protect the regulator as described in the text.

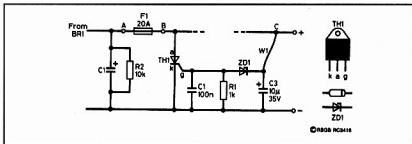


Fig 2. Added components for thyristor crowbar.

PLAN AHEAD

GippsTech 2003 Conference – 5 & 6 July 2003

<http://www.qsl.net/vk3bez/>

A Large Low Loop

A large low loop intended for NVIS operation on 80 metres was described in the *Technical Topics* column of Pat Hawker G3VA in *RadCom*, October 2002 by Peter Ball G3HQT. This was based on a design by Peter Pennell G2PL in the *Technical Topics* column in *RadCom*, July 1968. The idea was to work short skip and NVIS on 80 metre. Peter varied the original by feeding the short sides. This was to make the currents in each branch in phase. The antenna is shown in Fig 3. The feeder is a short length of open wire line to an automatic antenna tuner, SGC type SG230, located nearby

which allows operation on all bands from 160 metre to 10 metre.

Peter G3HQT found that the antenna not only worked as intended for NVIS on 80 metre but also provided reasonable performance and DX contacts on higher bands.

The antenna attracted Dr John Belrose VE2CV who was interested in the antenna and the performance and ran a computer model of the antenna using EZNEC/4. This appeared in the *Technical Topics* column of Pat Hawker G3VA in *RadCom*, January 2003. The results of the modelling which explain

the good performance are shown in Fig 4.

The antenna is an NVIS radiator for the 80 metre to 16 metre (8 MHz) bands but produces lower angle lobes for 15 metre and 10 metre. The lower lobe is in the X-Z plane (endfire) for 15 metre and is in the Y-Z plane (broadside) for 10 metre.

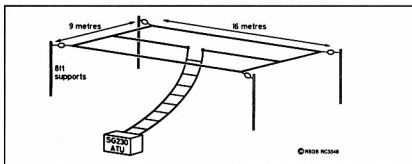


Fig 3. G3HQT's low large loop. The supports are 8 ft (2.4 m) and the perimeter is 50 metre. Feed is across the two short sides using open wire feeder and an SG230 tuner.

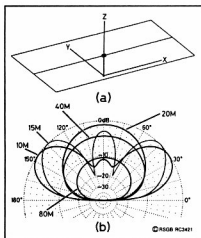


Fig 4. VE2CV's EZNEC/4 modelling of the vertical radiation pattern of G3HQT's antenna for 80, 40, 20, 15 and 10 metre.

A Simple Power Attenuator

A simple and different power attenuator appeared in the *In Practice* column of Ian White G3SEK in *RadCom*, January 2003. The idea came from Geoff Pike G10GDP and was from an item in the ARRL book *Solid State Design For The Radio Amateur* by Wes Hayward W7ZOI and Doug DeMaw W1FB.

The idea is to use a toroid transformer with the primary formed by a single wire passing through the centre carrying the current flowing to a dummy load. The secondary consists of 10 turns wound on the high permeability toroid. The arrangement is shown in Fig 5. With both terminations of 50 ohm the -20 dB coupled output is transformed into 0.5

ohm in series with the main load of 50 ohm. The main load impedance is essentially unchanged. This attenuator can be used either as a through line sampler or as a 20 dB attenuator. The termination in the main line needs to have an adequate power rating for the RF Power used.

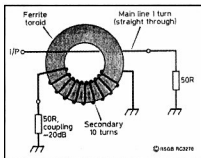


Fig 5. Using a small toroidal transformer as an RF sampler or attenuator. The 10:1 turns ratio gives -20 dB coupling to the branch line.

Good news about the Division's efforts to avoid interference from Low Interference Potential Devices (LIPDs) to its ACT repeaters. The least complicated option was to change the input frequency of Black Mountain's 70-cm repeater on to a new LIPD-free channel pair.

The increasing use of cordless head-phones is causing much concern to amateur radio clubs with 70-cm repeaters surrounded by suburbia.

LIPDs transmit wide-band broadcast audio for extended periods on frequencies that drift in and out of the repeater's input frequency. Accordingly, the repeater is frequently activated for long periods of time.

Many lower level inputs, typically from Hand-Helds, are blocked by the nearby LIPDs. The output stage of the repeater can become overheated, with the potential of failure, and normal use of the repeater becomes impossible. An option was to fit CTCSS to the repeater's input, but ACT Division's committee rejected this because it would have simply masked the problem, and heavy de-sense of the repeater's receiver would still remain. The old and new frequencies of the "70-cm repeater" are:

Old: 438.525 MHz out

433.525 MHz in

New: 439.950 MHz out

434.950 MHz in (IRLP)

Black Mountain now has two 70-cm repeaters, with the second one on: 438.025 MHz out - 433.025 MHz in, and intended for linking to other repeaters.

More good news! ACT-WICEN team

members had a new experience at the Subaru Rally of Canberra in April. The team assisted the rally organisers in trialling a commercial automatic tracking system alongside the proven method of voice reporting from the start, intermediate, and finish points. Each point was equipped with a SKYNET-device that, with a reader set up pointing across the track, and a data transmitter, relayed tracking data to a circling aircraft that relayed to Rally Control at Rydges Lakeside, Canberra.

Each rally car had a unique identifying tag - similar to shop goods - which was 'read' as the vehicle passed the reader. This data, and timing information, was passed automatically to a screen at Rally Control. Interestingly, the tag readers employed LIPD spectrum. The trials demonstrated the potential of the system, although 10 % of the data was corrupted, apparently due to faulty tags.

In the words of Alan Hawes (VK1WX): "This rally has proved that Radio Amateurs are, if nothing else, versatile and able to overcome equipment problems. The first duty of the trackside operator was to key-in the stage number and location. When the node had logged in, the display showed an Alpha description of the location. As each passing car registered in the Black Box, its registration number and the time of passing were displayed, together with an indication whether or not the data had been transmitted to Rally Control. That was the theory, and for much of the time it worked. However, there was still

operator intervention required!

In the weeks prior to the rally, ACT-WICEN was informed that Rydges Lakeside Canberra is used for the location of a 148-MHz paging transmitter. Arrangements were made for filter cavities to help reduce the interference to reception of the WICEN portable repeaters around 147 MHz.

When the team arrived at Rydges, they found two 300-watt paging transmitters! The team installed a UHF/VHF cross-band portable repeater in the suburb of Fyshwick to overcome this interference. A WICEN portable repeater was set up on Mt Jerrabomberra to cover Kowan Forest.

Murphy's Law struck. The repeater hated cold nights and would not function till the sun came up. "Like some of us" said Alan. The qualities of experience, ingenuity, and persistence were well represented in all the volunteers who assisted with the rally. Special thanks go to the HQ team: Phil (VK1ZPL), Paul (VK1TEE), John (VK1ET), Michael (VK1TMT), Neil (VK1KNP), and Mark Hawes, who kept it all glued together for a job well done.

WIA-ACT President, Alan Hawes (VK1WX), sent E-mails to all volunteers to thank them for their efforts. Alan said that the Subaru Rally of Canberra is a world-class event, and by supporting the rally, ACT-WICEN is assisting with income to the Canberra community.

The next general meeting will be on Monday, June 23, 2003 at Scout Hall, Longerenong St., Farrer, at 8.00 pm. Cheers.

Silent Key

Cec Bardwell Ex VK2IR

It is with sadness that we learn of the April passing of Cec Bardwell, ex VK2IR, after a long illness. Cec was a Life Member of the NSW Division. A private funeral was held on the 21st April

Born at Broome Western Australia Cec started his working life as a Radio Officer in the Merchant Navy. Later he became associated with the Marconi School of Wireless in Melbourne and then in Sydney. He became Manager and he

stayed with the Marconi School until it closed in 1991

Many Amateurs will remember Cec, who set up and conducted the Correspondence Course for the NSW Division. Cec also taught classes for almost 20 years. When Division was at Atchison Street, the class teaching and Morse training room was dedicated as the "Cec Bardwell Classroom".

The background to Cec is to be found in a paper written for the reunion of ex-

students of the Marconi School of Wireless, which was held in Sydney in 1997. The paper may be found at <http://www.suburbia.com.au/calinc/marconi/bardwell.html>

Any condolences for Cec may be sent to his son, Derek and Sandra Bardwell, c/o Parkway Funerals, 15 Pacific Parade, Dee Why 2099.

Advised by Ted Miles VK2FLB
(mailto:tedmiles@tpg.com.au) and
Tim Mills VK2ZTM

VK3 News

WIA Victoria Councillor, Barry Robinson VK3JBR

WIA Victoria web site: www.wiavic.org.au

email: wiavic@wiavic.org.au

We thank volunteers

On Sunday May 4, WIA Victoria hosted a celebratory luncheon for VK3 radio amateurs who are volunteers for either WIA Victoria or WIA Federal.

The WIA Victoria Council decided that the volunteers deserved a celebratory lunch, to formally recognise their contributions, and also give them a rare opportunity to meet with fellow volunteers and discuss mutual interests.

A total of 33 invitations were issued and 22 attended. Think about that for a moment, we have 33 WIA volunteers in Victoria.

Apologies were received due to other commitments ranging from being overseas to trying to running uphill against the Puffing Billy steam train in an annual event.

WIA Victoria President, Jim Linton VK3PC, addressed the luncheon. He expressed the view that being a volunteer put some balance in the lives of volunteers, it can become a hobby in itself, and be a way of personally putting something back into amateur radio.

Jim VK3PC said that some of the volunteers had served for 40 years or more, and could be identified by their thick skin, adding the observation that one needed such an attribute to survive.

Past WIA Victoria President, Herb Stevens VK3JO, responded with recollections of the production of AR magazine during the years of WWII, and how important it was for volunteers to keep the WIA going.

Each volunteer at the luncheon was presented with a certificate of appreciation, and had their photograph taken. Certificates have also been mailed to those unable to attend. The general feeling was that the luncheon was a pleasant surprise, gave an opportunity for socialising among the volunteers who often never meet, and the view that it should be done again some time in the future.

Radio mast case ends

Banyule City Council in Melbourne's north-east has finally withdrawn its demand that a small amateur radio mast be removed from the backyard of a home in suburban Bundoora.

The council engaged in a very hard fight against the radio mast claiming it was a Telecommunications Facility and therefore required a planning permit.

Mark Stephenson VK3PI said he was delighted to learn that Banyule Council was not going to prosecute its case against him by seeking an enforcement order in the Victorian Administrative Appeals Tribunal (VCAT).

The decision to withdraw the pending action was taken by Banyule Council after another recent VCAT hearing reaffirmed that amateur radio masts under 14-metres in height do not need a planning permit, and are not a Telecommunications Facility.

Mark VK3PI thanked WIA Victoria and its President Jim Linton VK3PC, and Greg Williams VK3VT, who provided support and advice.

He said he was indebted to WIA Victoria, Melbourne radio clubs – in particular the Western and Northern Suburbs Amateur Radio Club, North East Radio Group, Eastern and Mountain District Radio Club, and Moorabbin District Radio Club – and to many radio amateurs throughout Australia who heard of the case, and offered their support.

In January, WIA Victoria made a detailed submission to Banyule Council pointing out it was in error by describing the radio mast as a Telecommunications Facility. Despite the submission, the council then served Mark VK3PI with notice that it was to seeking an enforcement order under the Planning Act in the Victorian Administrative Appeals Tribunal (VCAT).

WIA Victoria President Jim Linton VK3PC said the Council was dogged in its approach and clearly had another agenda beyond amateur radio masts.

The council planning staff were

convinced that although the radio mast was not a satellite dish, it was similar, and a victory in VCAT would help its cause in seeking to limit or ban satellite dishes in residential areas.

Congratulations to Banyule Council for acting quickly to withdraw its proposed action against Mark VK3PI, so soon after learning it had made a mistake.

WIA Callbook 2004

The callbook has had its production and other difficulties in recent years, and the WIA Victoria Council wants to make a worthwhile contribution to try and avoid a repeat of history.

It is calling on its members to make written suggestions about how to improve the timeliness and accuracy of the 2004 callbook, both its hard copy and CD version.

If you have a comment or view, please forward them to the Callbook 2004 Review, WIA Victoria, 40g Victory Boulevard, Ashburton 3147.

The exercise aims to identifies the failings of the callbook and in a supportive and constructive manner, provide these as a "things to do" and "things not to do" for the information of the WIA Federal Council, and as suggested goals for those directly responsible for all aspects of its production.

Silent Keys

William O Hill VK2AVH

William died on 25 April 2003. He lived at 15 Morgan St., Petersham, NSW, 2049

Ron Daniels, VK3AEO ex VK2ADA,

We are saddened to announce the passing of Ron Daniels VK3AEO, ex VK2ADA on 1 May 2003. He was a brother in law of Trevor VK2TM.

Advised by Dan Cliff VK2DC

VK4 News

Qnews

SSTV on HF

VK4ZU Trev is experimenting with SSTV on 10.138 MHz. The SSTV USB transmissions are in accordance with the WIA 30-metre band allocation and should have no/negligible interference with other stations. His system will also act as a repeater at times during the day to provide a facility to enable you to see a replay of your pictures. An access tone of 1750 Hz is required.

Any expressions of interest or constructive comments are welcome, either on the 10.138 MHz channel or the City of Brisbane packet station VK4WIE.

That is VK4ZU @
VK4WIE.#BNE.QLD.AUS.OZ

Radio Scouting

TeleText page 958

<http://jota.scouting.net.au>

<http://www.scouts.com.au/discover/index.html>

<http://www.scout.org/jota>

JOTA 2003 - October 18 and 19 2003.
JOTA HF Voice Calling Frequencies
3590, 7090, 14190, 21190, 28590 kHz
14290, 18140, 21360, 24960, 28390 kHz
(DX)

The 46th Jamboree on the Air will take place on the 18th and 19th of October 2003. Anyone seeking information regarding JOTA can contact the VK Coordinator via the jota.scouting.net.au site.

You can bet on this

As featured in Backscatter this month came the news that theTARCinc. has been successful in obtaining a grant from the Gaming Trust to completely makeover the VK4RAT 2m Voice Repeater.

All the parts have arrived via Navcom Electronics (thanks to Barry VK4TBD and Lucia) and the repeater is currently on test on Barry's torture table.

A working bee at Mount Stuart to do the installation is planned for all day Saturday May 31st. Lots of hands needed as the installation includes rack mounting equipment, installing lightning suppressers, new coaxial feed and new antenna. Sausage sizzle lunch will be put together by the club with mien chef being Phil VK4JOK with his flip down travelling kitchen making baking cooking all the while!

An extra special something will be happening at the site - watch this space!

This is in addition to the experimental 23cm beacon on air as VK4RTL, which gives something more than just the Airport Radar to tune into on the 23cm band in Townsville. The deployment on 21st April of VK4RTL 1296.444 beacon at Mount Stuart is for a trial run. This mighty little beacon puts out a massive 2.5 watts and can be heard on most modern tri-band handhelds around Townsville and Thuringowa.

Engineered by Don VK4MC and installed at theTARCinc repeater site by Don and Tony VK4TJS, with help from Kerry VK4TUB and Gavin VK4ZZ, the 23 cm beacon transmits a continuous identification message, which cycles every minute. Reception and range reports requested - send to vk4wit@wia.org.au or hand them to Don/VK4MC next time you see him.

Regional VK4 students get futuristic

Queensland students are getting the chance to go sci-fi this month with a range of workshops and competitions in

robotics in a number of regions. Innovation Minister Paul Lucas said students in Rockhampton, Tully and Cairns would get the opportunity to learn how to build a robot, and program it to perform tasks such as kicking a soccer ball.

Mr. Lucas said "Robotics is used in all sorts of industries these days, and these workshops are one way that we can show students how high-technology careers can be exciting and rewarding. Our SmartFuture website www.smartfuture.qld.gov.au is aimed for 13-18 year olds and is designed to encourage them to consider a career in science and technology."

(For further information on the Robocup workshops: phone Paul Whitem in Tully on 4068 4555).

NQ man honoured for electricity foresight

A man who was at the forefront of the expansion of electricity supply in North Queensland has been honoured with a substation now bearing his name. Alan Sherriff was an alderman for 18 years with the Townsville City Council and spent 18 years on the Townsville Regional Electricity Board - 14 years as Chairman and oversaw the construction and commissioning of the Collinsville Power Station.

Other significant power projects underway in Townsville include the under-grounding of selected 11,000-volt power lines to improve the reliability of power supply during the curly wind season.

73s from Alistair

What is the WIA's position on the Foundation Licence?

Find out for sure on the official WIA website:

<http://www.wia.org.au>

or contact your Division (see page 56)

VK7 News

Justin Giles-Clark, VK7TW

Divisional

Our eighth VK7 Divisional Councillor to fill the last Council vacancy is Reg Emmett, VK7KK who is also the Divisional Education Officer. Welcome Reg. Our thanks Mike Jenner, VK7FB who stepped down as Broadcast Officer (and President) at the Divisional AGM. Mike has performed the Divisional Broadcast Officer's job for a number of years which involves creating a broadcast script each week from a range of sources and many times Mike also read the broadcast.

We welcome Rex Moncur, VK7MO and Trevor Spargo, VK7TS back from a very successful digital DXpedition to Lord Howe Island. Many meteor scatter contacts were made along the Eastern seaboard. Contacts were made with VK2, 3, 4 and VK7, including Joe Gelston, VK7JG and Dave Marsden, VK7DM operating Rex's home station. Three weak signal moonbounce contacts were made to Rex's amazement, two US contacts and one Swedish. I am sure Rex will be telling more of this successful DXpedition in future editions.

For greater access to the VK7

Divisional broadcast by both amateur and non-amateurs we now have a VK7 Divisional News email list courtesy of Yahoo Groups. Anyone can register their email address and receive the Divisional Broadcast text and relevant Divisional news free via email. The easiest way to subscribe and receive the broadcast via email, is to send a blank email to:

vk7divisionalnews-subscribe@yahoogroups.com

Once you become a member of the group you can view and search the archived broadcasts. Membership is open to anyone and messages sent to the list are moderated. The addresses are:

Post message:

vk7divisionalnews@yahoogroups.com

Subscribe: vk7divisionalnews-subscribe@yahoogroups.com

Unsubscribe: vk7divisionalnews-unsubscribe@yahoogroups.com

List owner: vk7divisionalnews-owner@yahoogroups.com

The VK7MO presentation notes and simplified assessment form for assessing compliance with the new EMR regulations can now be found on the VK7 Divisional web pages at: <http://www.wia.org.au/vk7/>.

Branch Meetings

The North West Branch May meeting was well attended for a talk by Jim Hiley, VK7JH. Jim is the NW Branch's resident IT expert and talked about computers, Internet viruses, hackers and firewalls. An informative evening, thanks Jim.

The May Southern Branch presentation was given by the Southern WICEN group's Roger Nichols, VK7HRN, Ron Brown, VK7ZRO and Gary Duence, VK7JGD and was a talk outlining just what is involved in providing the communications infrastructure for an event like Targa Tasmania and the Subaru Safari.

Ron, VK7ZRO is the Communications Manager for Targa and filled us in on the vast array of repeaters utilised, channels, nets and over 200 radios required to cover the premier Australian tarmac rally. Over 250 entries and 3000 volunteers are involved in the five days of the event. WICEN's primary role is the provision of the Stage net and Safety on Stage points. They are recognised by the organisers for providing high quality radio communications. This year Targa ran from May 13-18, 2003.

Gary, VK7JGD outlined the Subaru Safari communications. This is a very different event both in terms of the motor sport and WICEN involvement. The Safari involves 46 mostly professional rally entries on forestry tracks in the Southern Tasmania forests. WICEN's role is to set up and run the command/results network. This involves VHF and UHF repeaters to get signals back to the command centre in Hobart. The system has been designed and built up by Brian Welch VK7BW and Stu Braunholz, VK7NXX and it is a credit to them.

Thanks to Roger, Ron and Gary for sharing their experiences, it was great!

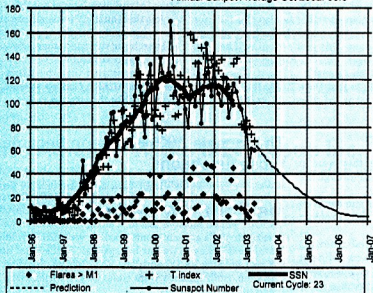
Contests

Reminder. Wadda Cup will be held on the 21st of June. This is an 80 metre, 60 minute dash for the Wadda Cup. Contest rules in the May 2003 edition of AR or from the Central Highlands Amateur Radio Club of Tasmania's website at: <http://www.vk2ce.com/vk7cht/wadda.htm>.

Sunspot Numbers

Monthly Sunspot Average Apr 2003: 60.0

Annual Sunspot Average Oct 2002: 90.5



Drawn from monthly data provided by the Ionospheric Prediction Service

AGM Report

As has now become the practice, ALARA held its AGM on the first Monday in May. As usual it was well attended. The number of participants on a normal Monday Net varies between three or four and eight or nine. For the AGM there were 16 attendees. They came from all the states. It was good that Bev, VK6DE made the effort although she cannot hear very much from the West because it is still daylight over there so 80 metres is extremely noisy. It was noisy for Margaret VL4AOE as well as the Queenslanders have quite a bit of interference from the South Asian stations. Both Susan VK7LUV and Helene VK7HD were present. It is some time since Helene was heard on a Monday night although Susan is quite often part of the Nets.

The outgoing President, Bev VK4NBC was heard by all this year. She was staying with Judy VK3AGC at the time, helping with the farm activities while Judy recovers from the new operation on her wrist. We all hope this rebreak

and reset will give her back a really usable wrist. It is over six years since she broke it in the first place.

Not everyone could hear everyone else but there is always someone who can hear and act as a relay if necessary.

Bev thanked the outgoing committee for their support. The new committee was accepted without a vote as the number of nominees matched the number of vacancies. There are not any really new faces, just a rearrangement of positions.

THERE IS STILL A VACANCY FOR A JUNIOR VICE-PRESIDENT. If any ALARA member feels they would like to have a turn on the committee please get in touch with our new President, Robyn VK3WX or out Secretary Margaret, VK4AOE. QTHR the callbook.

The New Committee

President	Robyn Gladwin VK3WX
Snr. Vice President	
	Susan Brain VK7LUV
Jnr. Vice President	TBA

Secretary	Margaret Schwerin VK4AOE
Treasurer/Souvenir Custodian	Bev Clayton VK4NBC
Minute Secretary	Bron Brown VK3DYF
Publicity Officer	Christine Taylor VK5CTY
Editor	Dorothy Bishop VK2DB
Office Bearers	State
Representatives	
Awards Custodian	Jean Shaw
Contest Manager	Marilyn Syme VK3DMS
Sponsorship Secty	Maria McLeod VK5BMT
Librarian	Kim Wilson VK3CYL
Historian	Christine Taylor VK5CTY
VK 1 / 2	Dorothy Bishop VK2DB
VK3	Judy Atkins VK3AGC
VK4	Margaret Schwerin VK4AOE
VK5/8	Jean Kopp VK5TSX
VK6	Poppy Bradshaw VK6YF
VK7	Susan Brain VK7LUV

Advance Notice

This year Susan VK7LUV and OM Alan will be participating in the International Lighthouse and Lightship weekend again. This is what Susan wrote recently:

"As usual there is information about the ILLW on the website of VK2CE (<http://www.vk2ce.com>), however Alan and I will be operating from Low Head Lighthouse again this year. This

lighthouse is at the entrance to the Tamar River where the Devil Cat used to go into Georgetown - this is also the Port for Launceston, which is further south on the river. This year's event will be from 0001UTC on 16th August to 2359 UTC on 17th August."

I hear that Dave ZLIAMN, long time operator of the 222 net for YLs

worldwide, will also be at a lighthouse. More information later about this.

Note that the ILLW is usually on at the same time as the RD. An opportunity to kill two birds with one stone. Make one contact get two points!!

Remember also that the RD is just before the ALARA Contest as well. Just the right time to test your radios.

Did you contact June VK4SJ?

If you had a contact with June (or Doug) when they were in the Cook Islands, don't forget to send a QSL card through the bureau.

June has been a regular on the 222 Net while she has been in the Islands so YLs have had a special opportunity to obtain an interesting callign.

In June's absence Dave ZLIAMN has enjoyed renewing friendships with "his girls". He was a long time co-ordinator of the 222 Net so has many pleasant memories of those years.

That special VK5 luncheon became those luncheons

In the last column mention was made of a luncheon in VK5 to be held a week early while Marilyn VK3DMS was in Adelaide. Jean VK5TSX, Shirley VK5JSH and Christine VK5CTY joined Marilyn that day, along with three OMs. Due to extra doctor's appointments Marilyn was still in Adelaide for the next Friday so we saw her again at "Bertie's" for lunch.

This time Meg VK5YJ and Tina VK5TMC met Marilyn and Christine. Both lunches were times of good friendship and much talk, of course.

Special event station in Darwin

The Darwin Amateur Radio Club of the Northern Territory, Australia will be operating a special event station with the callsign of V.I.8.N.T. to celebrate 25 years of self government.

The station will be opened officially on the 1st of July 2003 (Northern Territory Day) and run until the 31st Dec 2003. This special Amateur Radio callsign V.I.8.N.T. is allowed to be used by any Licenced VK8 Amateur. Only one Amateur will hold the callsign at any one time, meaning only one station on air at a time.

We have many VK8s who are interested in operating one-week periods on all bands and modes and the Darwin Amateur Radio Club will partake in all major contests with this special callsign. A special QSL card is being made up by the QSL Mgr Neil, VK6NE.

All QSLs will be accepted directly or via the Buro.

Adelaide Hills Amateur Radio Society

AHARS had a talk by Phil VK5NN at the April meeting. Phil had been involved in the development and building of the radio comm network for the local Electricity Supply Company ETSA from the beginning so had many tales to tell.

The system was designed in the early 40s. Phil was the draughtsman for the first circuit diagrams and became involved in some of the later modifications as the comm system expanded. One of the early, though not from the first series, radios was on show at the AHARS meeting, courtesy of the ETSA Museum. Similarly, some circuit diagrams were available that night.

The earliest equipment consisted of a super-regen detector with RF stage and the transmitter was a self-excited oscillator and final amplifier. Modulation was AM. The frequencies used were in the 31 MHz band. The initial system comprised a transmitter and receiver at Osborne Power House, one mobile set on the only emergency vehicle and a transmitter at Kelvin Buildings (the headquarters of AESCO/ETSA) and a remote receiver at Mount Osmond. This equipment was designed and installed after the War broke out in

1939 to ensure that loss of phone lines due to enemy action would not disrupt operations.

This elementary equipment was superseded by crystal locked transmitters and receivers on a large number of mobiles and similarly crystal locked sets at Kelvin building and Osborne after the War. These used frequencies of 31.1 MHz and 31.2 MHz using a single crystal for both transmitter and receiver and a 100 kHz IF stage in the receiver. These units were designed within ETSA and manufactured both by ETSA and by local contractors.

Ultimately the ETSA network was transferred to the 160 MHz band where it is used today.

An interesting piece of South Australia's development of one of the first ever radio systems in Australia, shown by someone involved in its introduction.

Remember, if you are visiting Adelaide you are welcome to attend a meeting of AHARS, on the third Thursday of each month. Contact Geoff VK5TY or Paul VK5PH QYHR the callbook for more information.

Gippsland Gate Radio & Electronics Club

At our recent Annual General Meeting, a slight change in Committee took place with the new office bearers listed as: Peter VK3VB President; Ian VK3KSZ Secretary; Valerie Benson Treasurer plus Paul VK3TGX and Graham VK3KCS as general Committee Members.

The 2003 - 2004 year promises to be a big year for GGREC with the new

Committee guiding us into it. Existing projects such as our IRLP Repeater will be placed high on the agenda as even in its temporary location, it is getting good use. The Annual mid year dinner is organised and will be held on June 28th. Look in the magazine for further details. Of course our Annual Hamfest is coming

fast with the new venue booked and rearing to go. The date is July 19th and promises to be our best yet. We are looking forward to everyone being there either to buy or sell. There should be a bargain for all.

Until next month 73s.

Bass Amateur Radio IRLP Group Inc.

VK3IRL Node 6330 presents a net schedule for the remainder of the year for the YL International IRLP Net:

This net goes to air on Tuesdays as follows:

June 3rd & 17th
July 8th & 22nd
August 5th & 19th
September 2nd & 16th
October 7th & 21st

November 4th & 18th
December 2nd & 16th
10.30am for check-ins
10.45am crosses over
Notices will be posted on
<http://www.qsl.net/ylradio/irlp.html>
Graham Williams VK3JBO

Club Secretaries
Publicise your Club's events for FREE on the Club News pages

Calling all Amateurs to join in the fun...

Australian Scout Jamboree 2004

5th – 15th January 2004, at Woodhouse, Adelaide.

The Australian Jamboree is on again in Adelaide, January 2004. We are expecting thousands of scouts from Australia and some overseas to participate in this Grand 10 day Event.

Jamborees have been a regular fixture on the Australian Scouting calendar for over sixty years.

Held every three years, Jamborees traditionally are hosted by the five larger states in rotation.

Jamborees are for 11 – 15 year old Scouts across Australia and overseas.

For Scouts, a Jamboree is an adventure and experience not to be missed. It is almost impossible to describe what it is like to attend a Jamboree. The sheer exhilaration of every new day and the new excitement and challenges it brings is beyond comparison.

The magic of the night time entertainment at the huge outdoor concert arena, often with big name stars giving the absolute best for the Scouts at the Jamboree. The spirit of friendship and mateship that pervades the whole Jamboree... a city filled with friends. The memories that you bring home from your Jamboree will stay with you forever.

JOTA at the Jamboree is on again as promised. As a part of the Special Activities Section we will be running a JOTA station near the precinct of where all the youth are going to be.

We will put together a number of activities throughout the 10 days.

Anyone interested in running one of the activities and / or being an Amateur Operator too, please contact Lea Adcock.

We would like to include the following activities:

**HF
VHF / UHF / IRLP
Echo Linking
Packet Radio**

We would also like some flyers and posters to put on show and for the Scouts to be able to read from WIA, WICEN and Radio Clubs in the suburbs for display and possible interests.

We are looking to promote the following:

**Amateur Radio
Radio in Scouting & JOTA
Foundation Licence possibly
coming to Australia
RIG (Radio Interest Group in SA)
WIA
WICEN**

In order to make this activity better than the last, we need many Amateurs with expertise in the above activities to be part of a roster system for each activity, so to give you a break and a chance to see the sights at the Jamboree.

There will be a special call sign for the event with signage for all amateurs to sign their name for participating in the event.

Special recognition cards will be given to the Amateurs involved in the JOTA Station.

So if you are interested in being apart of the fun and excitement at the Australian Jamboree 2004 and help out at the JOTA Station please contact Lea Adcock, JOTA Manager.

Lea Adcock
JOTA Manager, Australian Jamboree 2004
Ph: (08) 8381 5909, Fax: (08) 8381 5953
3 Middle Gully Ave, Seidow Park SA 5158
Lea.Adcock@senet.com.au

GippsTech 2003 Conference – July 2003

The Eastern Zone ARC (Inc) is pleased to announce preliminary details of the annual GippsTech Conference to be held in Churchill, Victoria on Saturday July 5 and Sunday July 6. This event has a well-recognised reputation as the premier technical conference in VK considering techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts.

The event formally commences at 0930 on Saturday and finishes early afternoon Sunday - provided we have enough speakers! Conference registration includes the technical sessions, morning and afternoon tea and a BBQ lunch on both days.

Importantly, the Conference runs a social program for partners not wishing to attend the technical sessions. A Conference Dinner is planned for Saturday evening at a local venue.

★ First call for Papers

Amateurs (& others with material to contribute) are invited to submit titles and outlines for topics to be presented at GippsTech2003. Presentation slots

can be brief (5 - 10 Minutes) through to 1 hour. Anything longer - you will need to justify!

Presentations can be formal or informal, or display. We use a lecture theatre for the formal (& semi-formal) presentations. Displays are open during coffee/tea breaks and after lunch. Potential presenters are welcome to contact me direct for further information or to suggest a topic.

The conference is held in Churchill about 170km east of Melbourne.

Further details can be found at the Eastern Zone Amateur Radio Club web site at: <http://www.qsl.net/vk3bez/>

On the website, you will find information on location,

accommodation options and the topics that have been presented in the past.

We request that all who plan to attend register as soon as possible using the on-line form at the web site. No money is required up-front, but pre-registration will assist us greatly with our detailed planning.

The Club looks forward to seeing you all in July.

Peter Freeman VK3KAI
Chair, Organising Committee
(vk3kai@qsl.net)
Phone: 03 5122 6416 or 03 9902 6416
Fax: 03 5122 6738 or 03 9902 6738
School of Applied Sciences
Monash University
Churchill Vic 3842, Australia
peter.freeman@sci.monash.edu.au

"It's in the words"

This is a continuation of a series of articles looking at different methods of assessment in learning and training. So far the two methods that have historically been used in Australia for entering amateur radio have been looked at in previous issues of "Amateur Radio". This article looks at one that has not been used in amateur radio. Please note, that by mentioning it here I am not advocating its use but rather providing information to help with any future decisions.

One of the biggest problems associated with examinations of any type is the fact that they are single events at the end of some course. Candidates do not receive any formal feedback as to their progress until the end, although informal methods, such as trial or sample exams are frequently used.

A second issue is that in an exam system it is not easy for a candidate to demonstrate research skills, creativity, or holistic views. Now all educational and training systems seek to address these issues by having students complete assignments or projects as they

are progressing through their study. The range of the different types used is quite large. In some courses completing this type of task can take a high proportion of a student's time and contribute significantly to the final award.

One of the confusing issues, which really has not been sorted out in the wider educational scene, is whether the assignment is to help with learning, be part of the assessment system, or both.

With regards to objectivity and subjectivity, issues mentioned about exams, assignments are similar to extended answer question exams. The marking system is usually subjective. Highly skilled markers are required.

One of the biggest concerns though, frequently expressed in the public domain, is the ownership of the actual answers. Since assignments are usually, but not always, written in a home environment, sometimes by students working in groups, who is the actual author is raised as a matter of concern. Linked closely to this is the issue of access to resources and expert knowledge.

A new issue about assignments which has appeared in the school and university scene in the past few years is the ready availability of "off the shelf" assignments on the Internet. Students can do some cut and paste and not too much thinking to have a rather good looking, quality answer.

So assignments have obvious problems. They do however have two significant advantages if they are well designed. They give the student the opportunity to express ideas as the student sees the learning situation. This is done as the student progresses through the course. If we remember that all people are uniquely different then this difference is being recognised to an extent.

So far three different methods have been looked at. Have you reached any conclusion yet about the suitability of any method for amateur radio?

Next time I will look at the most accurate of all methods, but it is the least acceptable in today's society. What is it?

ar

Silent Key

James (Jim) William Stanley Edge, VK2AJO.

It is with regret that I advise of the passing of Jim Edge, VK2AJO, at Penrith, N.S.W., on 8th April 2003.

Jim was born in Shropshire, England, on 16/9/1916. He came to Australia with his parents and brother Doug in 1923 settling as share farmers at Methul, near Coolamon in South Western N.S.W.

He married Sylvie Charter in 1941 and during WWII, worked in the Munitions Factories at Lithgow and Bathurst. After the war Jim returning to Coolamon. He completed by correspondence the Marconi School of Wireless Course and started his own Radio-Electrical Business in Coolamon. (He later moved the business to Wagga Wagga and was then partnered by his brother Doug).

During this period, Jim, with his good friend, Lyndsay Furner, VK2ANI, studied for their A.O.C.P. Jim gained his Amateur Licence, VK2AJO, in 1952.

Using a BC 348 receiver and modified ATS transmitter, Jim worked HF bands, obtained his DXCC and conducted Amateur Radio classes at his home in Coolamon. Many Amateurs in the Riverina obtained their A.O.C.P. from Jim's efforts.

During the 1950's many Field Days were held in the Riverina area, some at Coolamon and other regional towns. Jim was elected South West Zone Officer of the N.S.W. Division of the WIA. He built equipment and operated on 6 metre and 2 metre bands.

In 1970 Jim moved to West Dubbo in N.S.W. where he was active in the Orana Radio Club and, for a time, Secretary. He participated in the building of the clubs 2 metre VHF repeater at Needle Mountain, Coonabarabran. In 1975 I married Jim's eldest daughter, Ardel. Jim and I then had regular contacts on HF.

In 1983 Jim retired and moved to Harrington, N.S.W. He was active on HF and 2 metre bands until December 2002 when because of ill health he moved to a nursing home at Penrith, N.S.W. with his second wife, Dorothy.

Jim was a member of the N.S.W. Division of the WIA, Radio Amateurs Old Timers Association and a member of the Hunter Radio Group.

He is survived by his first wife, Sylvie (Coolamon) children, Ardel and Rodney Prout VK2CN & family, Sandra Edge and family, Bryson VK2VV and Judy, brother Doug VK2HWE, (all from Newcastle.), and second wife, Dorothy & family, (Sydney)

Rodney C. Prout, VK2CN.

Secretary/Treasurer Hunter Radio Group.

21 John Street. DUDLEY. N.S.W.



How's DX?

Ross Christie, VK3WAC

19 Browns Road, Montrose 3765, Vic

E-mail vk3wac@aol.com

Tribalism has no place in Amateur Radio

Although the world is becoming 'smaller' due to the wide spread use of information technology (radio, including amateur radio, was one of the first forms of electronic IT) it is obvious that some of us still behave in a very 'tribal' fashion.

We have all experienced the thrill of having a chat with a foreign amateur and exchanging the basic QSO format of equipment being used and signal/weather report.

However, during the recent Iraqi conflict I heard some especially unsavoury behaviour on the HF bands from some very 'agitated' hams in the west (no not WA, much further west!). The content of their QSOs was not exactly in the form of international friendship or the 'amateur spirit' and as such must reflect badly on hams worldwide as a whole.

While we might not agree with the opinion of another person, or the

behaviour of another race, we must respect there right to disagree with us and ours. We hams have at our disposal an effective tool with which to forge lasting friendships and goodwill all over the world, but some of us, probably a very small minority, have the potential to spoil and mar the reputation of the hams worldwide.

As radio amateurs, we should be attempting to 'bridge' the gaps between ourselves and foreign hams using respect and courtesy. We can discuss, if not all subjects, then at least most, even if at times we need to phrase our words carefully when we know that the person at the other end may be sensitive about

the subject under discussion, after all we can politely agree to disagree, can't we? The amateur bands should not be the place to air derogatory language against others, hams or otherwise.

Personally, I have many friends of many different races and I have often discussed the differences between their culture and mine. It has always been enlightening and informative when a story comes directly from the lips of someone, instead of from a history book (remember, history is written by the victors), and we have always remained friends at the end of our discussions.

Amateur radio shouldn't be a medium used to relay racial or cultural abuse.

The DX

J2, DJIBOUTI. Look for Karsten, DL2LAH, who will be in Djibouti until the middle of June. He says he will be active on HF and 6 metre. QSL via DL2LAH. [TNX DL2LAH and The Daily DX]

3X, GUINEA. Leonid, UT1WL, is currently active as 3XY1L from Conakry, Guinea. He will be there until the end of the year on a business trip. His equipment is a TS50 and operates on 15, 20 and 40 metre using SSB. Leonid says that there are problems with the reliability of the local electricity supply and has installed a 140A/h battery with the possibility of a petrol generator in the near future. On weekdays he is normally on air around 1800Z on 15m (try around 21200kHz) and at 2000Z will be on 20m, and at the weekends he will try and get on 40m too. Eventually he hopes to be able to operate on all HF bands. QSL via UY5XE. [TNX UT1WL and The Daily DX]

5Z, KENYA. Don Gardner, KC7JDC (ex 7Q7DC) has relocated to Nairobi where he plans to settle. He has been issued with the call 5Z4DE and says that he is the first US citizen in 12 years to be allocated a 5Z callsign. Don will be on air as soon as he can get antennas up in

the air, he is planning on putting up a mast and some yagis. QSL direct only to GOIAS, ALLAN HICKMAN, THE CONIFERS HIGH STREET, ELKESLEY, RETFORD, NOTTINGHAM DN22 8AJ, U.K. [TNX GOIAS]

BU2, TAIWAN. Mark, JJ1TBB, has been granted permission to use the new Taiwanese prefix BU2. He will be signing as BU2/JJ1TBB and will be operating mainly CW and SSB on the 40 - 10 metre bands. Mark expects to be in Taiwan for as long as four years which should put the prefix in a good number of logs, previously Mark has been 9V1AN in 1995-96, VK9XB in 1996 and XV2A in 1991. QSL via JLIANP. [TNX JJ1TBB and The Daily DX]

HS, THAILAND. Charlie, K4VUD, is active again from Thailand signing HS0ZCW. He says he will be there until about the 15th of June. Charlie says that he cannot operate on any of the WARC bands nor on 80 or 160. Apparently, Thailand has not granted HS hams access to the WARC bands. QSL via K4VUD. [TNX K4VUD and 425 DX News]

KC4, ANTARCTICA. Ernie, W1MRQ, will be active as KC4USM from the American McMurdo Station on Ross

Island (AN-011), Antarctica until late August. QSL via K1CA, LAURENT J BLOUIN, 52 WARNER HILL RD, DERRY NH 03038, USA. [TNX W1MRQ and The Daily DX]

OZ, DENMARK. Ben, OZ6B, will be active from Bornholm Island (EU-030, also counts as BO-001 for the Danish Islands Award) from the 19th until the 26th of June. Ben says to listen around +/- 14265 kHz. QSL via bureau or direct to OZ6B, BENT PEDERSEN, LOEGET DAM 3, DK-7100 VEJLE, DENMARK. [TNX OZ6B and 425 DX News]

S9, SAO TOME and PRINCIPE. Duarte, CT1CPP will be operating as S92UN from Sao Tome and Principe until the end of June. He says that he will try to operate on 14270, 21270 and 28470 kHz SSB as much as possible. QSL via CT1CPP. [TNX CT1END]

SP, POLAND. Helmut, DL7VOX will be active on all bands 80 - 10 metre using CW, with a possibility of some SSB, signing as SP1/DL7VOX/p from Wolin Island (EU-132). He plans to be there from 26th of May until the 14th of June. QSL via DL7VOX via the bureau or direct to Helmut Radach, Riesaer Str. 93, D-12627 Berlin, Germany. [TNX DL7VOX and 425 DX News]

SV5, DODECANESE ISLANDS. Ermanno, IK2WZD says he will be active using digital modes as SV5/IK2WZD from Lipsti Island, Dodecanese (EU-001) from the 24th of April until August. QSL via IK2WZD via the bureau or direct to IK2WZD, **ERMANNO ANDREA MARAZZINI**, VIA **LEONARDO DA VINCI 13, 20013 MAGENTA - MI, ITALY.** [TNX IK2WZD and 425 DX News]

SV9, CRETE. Jan Erik, SM2EKM, will be operating as SV9/homecall on whatever HF bands he can erect antennas for from Agia Marina, Crete (EU-015). He will be there from the 29th of May until the 12th of June. QSL via SM2EKM either via the bureau or direct to SM2EKM, **JAN ERIK HOLM, LOVAGEN 15, S-961 68 BODEN, SWEDEN.** [TNX SM2EKM and 425 DX News]

YA, AFGHANISTAN. Nick, G4KUX, has returned to Kabul, Afghanistan and will be on air as YA4F until April 2004.

Special Events

International Lighthouse and Light Ship Weekend (ILLW). GM4SUC would like everyone to know that this year the ILLW will be held on the weekend of the 16/17th of August, from 00.01Z on the 16th until 23.59Z on the 17th. This very popular event attracts hundreds of stations set up in or near active lighthouses and lightships, last year a total of 316 sites in 45 countries took part. The Amateur Radio Lighthouse Society offers a number of awards and certificates for achievements in various categories. So for a great weekend of fun and amateur radio register on line at <http://vk2ce.com/illw/> or Email your stations details to illw@vk2ce.com. All registered stations will appear on the list at <http://vk2ce.com/illw/2003.htm> [TNX GM4SUC and 425 DX News]

TM0, FRANCE. The French Government Service, ART, has granted permission to Jean Marc, F8IXZ, to use the special callsign TM0GAY. The station will be on air from the 20th of June until the 4th of July and will play a part in publicising the 'French Gay Pride' activities. Activity will take place on all HF bands from 40-10 metres mainly on CW with SSB a possibility. QSL via F8IXZ either direct (including enough postage in IRC or USD, see Bill, W9OL's

He has put up a GAP Titan multiband vertical antenna for use on 80-10 metre. He has been heard on a net on 7047.2 kHz, around 1800 to 1930Z. Nick says that there are at least two other hams in Afghanistan, they are YA1CQ, who operates mainly on 10 metre, and a French operator (call unknown). Nick has a website with some very impressive photographs of himself and the local scenery at <http://www.xs4all.nl/~gouwelee/> (click on the YA4F button). No QSL route but try G4KUX via the bureau. [TNX G4KUX and The Daily DX]

YB, INDONESIA. Kadek, YC9BU and a group of other hams plan to be active on 20, 17, 15, 12 and 10 metres signing as 8A9R from Rote Island (OC-241). No exact dates were given but Kadek indicated a period of about 10 days sometime in mid June. QSL via YC9BU. [TNX YC9BU and 425 DX News]

ST, MAURITANIA. Frank, DL8YHR, is heading to Mauritania in early summer (European). He'll concentrating

on 6 and 2 metres (mainly EME) with some HF activity. He will be on air from the 28th of June until the 7th of July. Frank will be operating from the QTH of 5T5SN, equipment will comprise of a FT920 and an IC706MKIIG. QSL via ON4ANT. [TNX DL8YHR and The Daily DX]

XX, SOUTH SHETLANDS. Lee, DS4CNB, will continue to operate as D88S from the South Shetlands until the 30th of November. Activity will be on 40-10 metres including WARC using CW. QSL via DS4CNB. [TNX DS4CNB and The Daily DX]

ST, SUDAN. Marco, ST1MN, plans to be on air from Sudan until sometime in late June, exact date unknown. Since Marco is not used to pileups he is pleading for some patience and tolerance when he is operating. QSL via IV3OWC. [TNX ST1MN and The Daily DX]

website at <http://www.qsl.net/w9ol/ircchart.txt> or via the French REF Bureau. Direct cards with insufficient postage will be returned via the bureau.

F, FRANCE. ON4LBV, of the SFDXAG, says that he and a group of friends will be on air using the callsign F/ON6JUN/P from the 'Pegasus Bridge' memorial museum from the 5th until the 8th of June. The special event station commemorates the D-Day invasion of WWII. There is also a website at <http://www.qsl.net/on6jun> with more information on the special event station. QSL via ON4AFU. [TNX ON4LBV]

F, FRANCE. The special event station TM6ACO will be on air from the 7th until the 15th of June to celebrate the 71st event of the '24 Hours of Le Mans'. QSL to F8KFI via the bureau or direct to P.O. Box 22088, 72002 Le Mans Cedex 1, France. For further information see <http://asso.proxiland.fr/aras72/> [TNX F5TJC and 425 DX News]

The special event station ZS90SAP will be active until the 31st of December on the 80, 40, 20, 10 and 6 metre bands. The callsign celebrates the 90th anniversary of the Police Department. The station is being manned by members of the Vaal Triangle ham club. [TNX The Daily DX]

VE, CANADA. Operators VE3UUH and VE3GID will be signing as VB3MCC, a special event station, from the 27th of June until the 4th of July to celebrate the 100th anniversary of Canadian Military Communications. Permission has been granted to all VE's by Industry Canada to substitute the following special prefixes into their callsigns between the 1st of July until the 31st of August: XM for all VE's, XL for all VA's, XN for all VO's and XO for all VY's. [TNX VA3RJ, VE3UUH and 425 DX News]

SP, POLAND. The special event station HF6UE will be active until the 10th of June to celebrate Poland's European Community Accession Agreement (joining the European Union). The suffix 'UE' represents 'Unia Europejska' (European Union). QSL to SP6ZDA preferably via bureau or direct to Scouts Radio Club SP6ZDA, P.O. Box 41, 51-673 Wrocław 9, Poland. [TNX SP6NIC, SP5UAF and 425 DX News]

SP, POLAND. Club station, SP4KSY, will be on air as HF650O celebrating the 650th anniversary of the town of Olsztyn. The station will be on air from the 1st of May until the 31st of July. QSL via SQ4NR, direct to Grzegorz Gawel ul. Herdera 16/14, 10-691 Olsztyn, Poland or via the bureau. [TNX SQ4NR and 425 DX News]

Dxpeditons

VP9, BERMUDA. Chris, W3CMP, is planning a DXpedition to VP9, Bermuda. He hopes to be on the 6 metre band from the 27th of June until the 5th of July. Apparently he has received special permission and a high power permit from Bermuda Telecom (with some help from VP9GE) to run a 3CX800

linear amplifier into an M2 nine element yagi. Chris will also be running 200 watt on 2 metres and is hoping for some sporadic-E propagation into Europe, Africa and the Americas. Little hope of reaching VK but you can never be sure on 6 metres! [TNX W3CMP and The Daily DX]

SV9, CRETE. Costas, SV1XV, is part of a Dxpediton to Gavdos Island (EU-187) which will also count as SV9 (Crete) for DXCC over the period of the 1st until the 10th of June. Activity will be on 10, 12, 15, 17, 20, 40 and 80 metres RTTY. QSL direct only via SV2DGH, CHRISTOS SPYRIS, P.O. BOX 4200, 57019 PERREA-THESALONIKI, GREECE. [TNX SV1XV and The Daily DX]

Round up

F5RQQ is in French Polynesia, where he will try to be the first to operate from the closed French nuclear test site at Mururoa Island (Atoll), IOTA OC-066. On the official IOTA list the spelling of the name is slightly different, Moruroa. [TNX F5RQQ and The Daily DX]

Some DX news from Stuart, VK8NSB, who sent a short note to me with some details of some interesting DX stations:

Call	Time	Freq.	Sigs	QSL
UTC	kHz		via	
5Z4IC	1055	28495	5 x 8	MW0AIE
OD5NH	1120	21240	5 x 6	QRZ.COM
S92UN	1200	21257	5 x 5	CT1CPP (IOTA AF-023)

There have been a number of reports in the various DX news bulletins that some US Military personnel have been operating as YI/home call from Iraq. Operators heard on air include Jim (YI/KT4CK), a member of the 101st Airborne, who was spotted on the DX cluster system. Another has been Mark (YI/NG5L), who is with the 82nd Airborne and was reported to have been in the vicinity of the town of Nassariya. A spokesman for the ARRL, Wayne Mills, N7NG, says that activity from Iraq will not be recognised for DXCC accreditation if the operator has written

permission from their CO (commanding officer) British or American. When a legal and stable government is finally established in Iraq all amateurs local, and visiting, will require official authorisation before going on air. Remember, in cases such as these "WORK FIRST, WORRY LATER". [TNX The ARRL Letter]

United Nations employee 4L4FN (ex P5/4L4FN). Ed Giorgadze, says he will be leaving Pyongyang, North Korea very soon. He'll head for Beijing and then to the Middle East. Ed, who is works for the United Nations World Food Program, does not know exactly where in the Middle East but Iraq, YI, is a strong possibility. QRX for more details soon. [TNX 4L4FN and OPDX]

Bill, W9OL, has an excellent website that carries all sorts of information regarding IRC and Greenstamps. The site is an excellent tool for finding out just how many IRCs or Greenstamps are required to cover postage from various countries around the world. Have a look at <http://www.qsl.net/w9ol/ircchart.txt> for more information. [TNX W9OL]

A bit of sad news from Stephen, VK2PS who sent me a note reporting the passing of Dr Selim El-Rifai, OE6EEG. "Selim",

as he liked to be known, died in his sleep in hospital on the 30th of March 2003 after a prolonged period of pain. Selim, who had mastered several languages, conducted the 'European DX Net' that operates on 14243kHz at 0600Z every weekend. The net mainly catered for rare DX and stations in the Middle East, Pacific, Central and South America and Africa. He was probably responsible for many VK and ZL operators' first rare DX contacts. His wife Isabella to whom we send our deepest condolences survives him. Vale Selim, OE6EEG. Selims QSL address is correct in all DX call books. Incidentally, the European DX Net is still functioning at the weekends and is now handled by Bandi, HA5CQ.

This month the DX information was provided by the following individuals and organisations; W9OL, 4L4FN, F5RQQ, W3CMP, SQ4NR, SP6NIC, SP5UAF, VA3RJ, VE3UUH, F5TJC, ON4LBV, GM4SUC, ST1MN, DS4CNB, DL8YHR, YC9BU, SM2EKM, G4KUX, IK2WZD, DL7VOX, CT1END, OZ6B, W1MRQ, K4VUD, JJ1TBB, GOIAS, UT1WL, DL2LAH, VK8NSB, VK2PS, OPDX (BARF 80), 425DX News, The Daily DX, RSGB and the ARRL.

Over To You

Maritime Amateur Radio

Since the demise of many coast stations, official maritime communication has narrowed down to emergency only traffic via satellites and a few HF stations. Other digital or voice communication goes via expensive satellites (Inmarsat, mobile phone etc.) or commercial providers such as PentaComstat. Many yachties have therefore taken recourse to AR with legal or illegal callsigns for personal ship/ship contacts or exchange of safety and personal

messages via maritime amateur nets. They usually work between 14.300 and 14.320 MHz. where small wire or vertical antennas are effective.

As there is at sea often a need for a talk with a real person I would encourage HAMs to listen out for (legal) m/m stations. They have often interesting or serious things to say.

AR could also give some info about maritime nets and operators.

Note. I could even think about MM contests, certificates, maritime (sea) days to add to field days, for the people who like these things. Technically a few things are still interesting such as making a good earth without galvanic corrosion, rigging backyard antennas, interference, reviews of equipment in a hostile environment, suitable satellite antennas etc. A bit of a new area and I don't know of much attention given to it.

VK4CPG/mm

73, Krispy

Contest Calendar June–August 2003

Jun	7	VK/trans-Tasman Contest (CW)	(Apr 03)
Jun	7/8	ANARTS WW RTTY Contest	
Jun	7/8	WW South America Contest	(CW)
Jun	14	Asia-Pacific Sprint (SSB)	
Jun	21/22	All Asian DX Contest (CW)	
Jun	21	80m Dash for Wadda Cup (SSB)	(May 03)
Jul	5	Jack Files Contest (CW/SSB/PSK31)	(May 03)
Jul	5/6	Original QRP Contest (CW)	
Jul	19	Pacific 160 Metres Contest	(CW/SSB)
Jul	19	Colombian Independence Day Contest (CW/SSB/RTTY)	
Jul	26/27	Russian RTTY Contest	
Jul	26/27	Venezuelan Independence Day Contest	(CW)
Aug	9/10	Worked All Europe DX Contest	(CW)
Aug	16/17	RD Contest	(CW/SSB/FM) (Jul 03)
Aug	16/17	Keymen's Club of Japan Contest (CW)	
Aug	23/24	TOEC WW Grid Contest	(CW)
Aug	30/31	SCC RTTY Championship	
Aug	30/31	YO DX HF Contest	(CW/SSB)

Rules: Pacific 160 Metres Contest 2003

Saturday, 19 July, 2003

0700 - 2300 UTC

Object: P2, ZL and VK stations to make as many contacts as possible on 160 metres. DX stations are encouraged to participate, but may only work P2, ZL or VK.

Categories: Single Operator; Multi-operator; SWL

Sections: CW only; SSB only; MIXED

Frequencies: CW: 1810 - 1840 kHz

SSB: 1843 - 1875 kHz

(Note: Guard band 1840 - 1843 kHz. Contacts not permitted)

Exchange: RS(T) plus serial number beginning at 001.

Score:

For P2, ZL, VK -

- One point for QSO with own call area;
- two points for other call areas in ZL or VK;
- three points for Pacific Islands (ZK1, VK9)

For Pacific Islands -

- one point for QSO with own call area;
- three points for P2, ZL, VK;
- five points for QSOs outside P2, ZL, VK.

For stations outside P2, ZL, VK or Pacific Islands - five points per QSO.

Multiplier:

For P2, ZL, VK - total number of VK, ZL and P2 call areas worked, plus OTHER DXCC countries.

For stations outside P2, ZL, VK - total number of P2, ZL and VK call areas worked.

Final Score: Total QSO points times total multipliers.

Certificates: to top scorers in each mode, call area of ZL and VK and in each DXCC country.

Logs: Please show full QSO details of call worked; mode; time UTC; exchange. Include Summary Sheet showing operator's callsign; name; mailing address; category and section entered; points claimed and a signed Declaration. Logs submitted electronically need only show operator's name in lieu of signature, but must show all other information.

Send Logs:

- By mail to -
Ian Godsil VK3VP, 363 Nepean Highway, Chelsea, 3196, Australia
- By e-mail in ASCII/Cabrillo format to: vk3vp@vckham.com by 16 August, 2003.

Rules: A.N.A.R.T.S. WW RTTY Contest 2003

Saturday 14 - Sunday 15 June
0000 - 2359z

Contest Period: The contest takes place on the second full weekend of June each year. Contests start 0000 UTC Saturday and end 2359 UTC Sunday. For 2003 the contest dates are Saturday 14th and Sunday 15th June. Not more than 30 hours of operating is permitted for Single Operator Stations.

Non-operating periods can be taken at any time during the contest.

Multi-Operator Stations may operate the entire contest period. A summary of operating times is required with each single operator log.

Bands: Use Amateur bands 80, 40, 20, 15, and 10 metres.

Modes: All digital modes are permitted including PSK etc.

Note: No satellite operation is permitted.

Classifications:

(A) SINGLE - OPERATOR (One transmitter)

(B) MULTI - OPERATOR (One transmitter)

(C) Short Wave Listeners

Exchange: To consist of RST, Time (UTC), and Zone (CQ).

Scoring: For each band - Use the "Exchange Points Table (Marked 1994)" to Obtain QSO points for each QSO. Any contact with VK2SG earns double the table points for that QSO. Count Countries/Multi's worked (see definition).

Total all bands used to obtain

(1) Total QSO Points.

(2) Total Countries/Multi's.

World stations calculate "VK BONUS", as follows - 100 points for each VK worked on 14 MHz, 200 points for each VK worked on 21 MHz, 300 points for each VK worked on 28 MHz, 400 points for each VK worked on 7 MHz, and 500 points for each VK worked on 3.5 MHz.

Claimed Score: For WORLD STATIONS is calculated by multiplying

(1) TOTAL QSO POINTS by

(2) TOTAL COUNTRIES/MULTIs, then THAT TOTAL by

(3) the NUMBER OF CONTINENTS WORKED DURING THE CONTEST. (Note that each continent counts once only to a maximum of 6).

To the total obtained ADD the "VK BONUS" to show GRAND TOTAL CLAIMED SCORE.

EXAMPLE for World Station: 720 QSO Points calculated from Points Table (1) X 29 COUNTRIES/MULTIs (2) X 5 CONTINENTS (3) = 104,400 points, plus (+) 6 VK stations worked on 14 MHz (that is 600 VK Bonus Points), giving a grand total of 105,000 points.

Claimed Score: For AUSTRALIAN STATIONS (VK1-VK8) is calculated by multiplying

(1) TOTAL QSO POINTS by

(2) TOTAL COUNTRIES/MULTIs and then that total by

(3) the NUMBER OF CONTINENTS WORKED during the contest with a maximum of six as stated above.

This calculation gives the GRAND TOTAL CLAIMED SCORE.

IN ALL CASES: A station may only be worked once per band, but may be worked on other bands for QSO points and multipliers.

COUNTRIES/MULTIs: Are counted as per ARRL DXCC list of countries, EXCEPT THAT Australia (Areas 1-8) Canada, Japan, and U.S.A. mainland do not count as separate countries. HOWEVER, each call areas VK1 - VK8, and each call area in Canada, Japan and mainland U.S.A. DO COUNT AS SEPARATE MULTIPLIERS. CONTACT with one's own Country/multi counts for QSO points but does NOT COUNT AS A MULTIPLIER. (Remember that call areas VK1 - VK8, and call areas in Canada, Japan, and U.S.A. mainland are Multis).

Logs: Logs must show in this order:

1. DATE
2. TIME (UTC)
3. CALLSIGN OF STATION WORKED/HEARD.
4. EXCHANGE INFORMATION SENT/RECEIVED (RST/ TIME/ZONE)
5. POINTS CLAIMED.

Summary Report: Summary sheet must show: callsign of station, name and address of operator, bands used (a separate log is required for each band), the points claimed for each band, the number of countries worked on each band, the number of continents worked and details of VK BONUS calculations for World Stations. A summary of the calculations made to obtain the GRAND TOTAL CLAIMED SCORE as per the "Scoring" instruction will assist checking. The general certification regarding compliance with Rules and the signatures and Callsigns of operator(s) is also required. Multi-operator logs must contain signatures and Callsign of each operator. Single-op logs must show summary of operating times. Dupe sheets will be appreciated for any band log over 75 QSOs.

Awards: A Plaque is awarded to first in World in Classification A. Certificates will be awarded to: 1st to 5th, places in the World, 1st to 3rd places in each of six continents, 1st to 3rd in each country/multiplier in each Classification. THE JUDGE'S decision will be final and no correspondence will be entered into. We reserve the right to list multiple awards on any Certificate and/or vary the numbers of awards given without notice.

Logs become the property of A.N.A.R.T.S.

Closing Date. Logs must be received by the Contest Manager A.N.A.R.T.S., P.O. Box 93, Toongabbie, NSW, 2146, Australia, by 1st September of the year of the contest. Logs can also be sent via E-mail to ctdavies@bigpond.com PLEASE SEND .TXT FILES ONLY.

POSTAGE AND HANDLING FEE: A postal fee is applicable with the following options:

1. Contesters submitting their logs by E-mail will have the Contest results, Manager's report, Contesters' comments, and the next year's rules, sent to them via the E-mail address used to submit their log. No Awards will be posted.

Urunga Convention 2003 Results

The 2003 Urunga Convention was held on the Easter weekend 19/20 of April. This year the weather was kind with only a few light showers on the Saturday. The Committee hopes all who attended had an enjoyable time and may come back next year. The convention was a great success with more than 75 people going through over the 2 days.

Thank you to the traders who set up their tables and to Brian VK2BI for organising the children's 80 and 2 metre events.

Here are the results of the various events, have been published already over the packet network. These results are the same as those sent via packet. :

Easter Saturday 19. April 2003:

10am to 11am

3.5 MHz mobile hunt:

1st: VK3YDF Adam Scammell

11.30am to 12 noon

Pedestrian 2m hunt. Multi TX 146MHz:

1st: VK3YDF Adam Scammell.

2nd: VK3TJN Bruce Paterson

2pm to 3pm

2m mobile hunt. Multi TX 146MHz:

1st: VK3YDF Adam Scammell.

2nd: VK3TJN Bruce Paterson

3.30pm to 4pm

Talk-in 2m mobile 146.5MHz:

1st: VK2YMW Chris Williams

2nd: VK3YDF Adam Scammell

Easter Sunday 20. April 2003:

9am to 9.30am

Urunga Scramble:

1st: VK2FA Graham O'Brien

10am to 10.30am

40m fun event:

1st: VK2YMW Chris Williams

11am to 12noon

2m mobile Multi TX 146MHz:

1st: VK2YMW Chris Williams

2nd: VK3YDF Adam Scammell

1.30pm to 2pm

2m Pedestrian Multi TX 146MHz

1st: VK3YNG Brian Ackerly

2nd: VK3XAJ David Beard

2.30pm to 3pm

2m Pedestrian Talk-in:

1st: VK3YDF Adam Scammell

Winner of the Jack Gerard Memorial

Award: VK3YDF Adam Scammell

Winner of the Brian Slarke Memorial

Award (overall 2 days): VK3YDF Adam Scammell

Saturday junior event:

80m

1st: Stefan Winkler

2m

1st: Carl Winkler

2nd: Reece Austin

2nd: Kelly O'Brien

Sunday junior event:

80m

1st: Stefan Winkler

2m

1st: Kelly O'Brien

2nd: Cameron Williams

2nd: Caitlin Williams

Congratulation to all winners.

Best 73 and see you at next year's convention from the committee.

Marie (xyl 22CQ), Arnold VK2ADA, Ken VK2DGT, Col VK2JC, Len VK2BLZ, Wayne VK2JJK

ar

CONTESTS – Rules: A.N.A.R.T.S. WW RTTY Contest 2003 continued

- Contesters submitting their logs by E-mail and wish to receive all the above items, plus a points table, and/or any award they may have won, Plaque or Certificate, must submit a separate Postal Communication to ANARTS: P.O. Box 93 Toongabbie, N.S.W. 2146, with a remittance to the value of 5 (Five) United States Dollars.
- Contesters submitting their logs by Post and requiring ANARTS to send them the information mentioned above, must include a remittance to the value of 5 (Five) United States Dollars.
- Postal logs received without the required remittance will be accepted and processed in the normal way. No awards or other information will be posted in return.

Note: The Postal Fee for Australian and New Zealand Stations in all options above is 3 (Three) Australian Dollars.

Notes on submitting logs by email

Please submit your log using a text format, that is, an ascii .txt file.

Do not use a Rich Text file, or any other type of file, and do not Zip them up.

Logs received in any other form will be put to one side and if time permits we will try to process them.

Please check your log has the following before transmitting:
Your callsign, name and postal address, and your email

address to send you the results. All items required in the Summary Sheet are correct, that is you have included per band: number of QSOs, number of QSO Points, number of Multiples, number of Continents worked and number of VK Bonus Points per band. Your log cannot be processed if these items are not shown.

Do not name the log ANARTS. Please use your own callsign. Example vk2ctd.sum Many stations have used ANARTS for their log title, which means the Computer puts a little window on the screen saying "There is already a file of that name, do you want to overwrite." All such logs have to be re-titled, so your cooperation please.

Do not send multiple E-mail copies of your log if you do not receive an acknowledgment. For the 2002 Contest several stations sent two copies of their log and one station sent its log 3 times. This resulted in severe confusion in the Register of logs. With dozens of logs being received each day, it is almost impossible to acknowledge each log. If you do not trust the E-mail system and require an acknowledgment, please send another E-mail requesting the same, but please do not clog up the system with another log. Some Mail programs include the Automatic Acknowledgment facility, use this to get an automatic QSL message. The list of logs received is sent on to the RTTY Reflector rtyt@contesting.com and is also sent to Contes@WW and RTTY@WW on Packet Radio.

ar

A Summary of Automatic Antenna Trackers

Last month I mentioned that my radio shack computer is fast approaching its use-by date, and therein lies a problem. That particular computer is host to the ubiquitous Kansas City Tracker/Tuner, which has served so well for so many years.

"So what", I hear you say. Well - it's not that the KCT/T is in any way deficient or lacking in any of the essential features. It still goes like a rocket, but.... like it or not, computer technology is moving right along and ISA slots, already considered by some to be museum pieces, may soon become a thing of the past. The KCT/T has been around long enough to have been conceived when ISA slots and 486 processors were the latest things in computer technology. As far as I have been able to determine, the makers of the KCT/T, L L Grace and Co. have no plans to redesign it to suit PCI or whatever. To be sure it is still possible to get hold of new computer motherboards with a couple of ISA slots but the way things appear to be headed,

that situation may not stay around for much longer. A solution favoured by many is to keep an older computer going as long as possible and to this end one could lay in some spare motherboards with ISA slots while they are still available. Being somewhat frugal by nature that's probably what I'll be doing. The KCT/T was not a cheap item and even though it's served well over many years, the thought of throwing it away is not pleasant. But if you are just starting out you might not like the idea of giving an older, less capable computer any desk space. So - let's see what other choices are around for automated antenna tracking and Doppler shift control. A few years ago devices like the Sattrack-3

were all the go. There were several flavours but they were generally built around something like a Z-80 processor chip and as such could be operated independently of your main computer. Mine was used extensively on mountain top expeditions for this very reason. Many are still in service and the later ones sported digital readout and automatic keps update. As far as I know these particular units are no longer available. Although still around in various forms, the "free-standing" type of controller has given way in more recent times to simpler hardware devices capable of being driven by many of the more popular satellite tracking programs.

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034
Graham's email address is:

vk5agr@amsat.org

UNI_TRAC 2000 by ZL2AMD

This is one of the more popular and successful tracking systems around and is definitely worth a look. The UNI_TRAC is well supported and the design has been kept up to date with modern trends in computer technology.

Latest news of this device is obtainable from the author's excellent web site at:

http://homepages.paradise.net.nz/lamontd/UNI_TRAC is well worth a look if you are considering automating your antenna system.

FOD-track by XQ2FOD

Homebrewers could well find this site interesting. If you have a preference for building and debugging this sort of equipment, this could be the one for you. Once again the author gives good support and there's no shortage of detail on his up to date web site. <http://www.qsl.net/v2dx/projects/fod.htm>

Manfred has done a great job in developing and supporting this device and it has found favour among home brewers the world over. His description of the theory behind such devices makes this site worth a visit if only for that purpose.

Again - for the homebrewer

I can't vouch for these sites, as I have no first or second (or even third) hand knowledge of their construction. If you're in the market, have a look and make up your own mind.

ARSWIN <http://www.ea4tx.com/products/ars.htm>

Satellite Tracker <http://www.ultimatecharger.com/dish.html>
SAEBTrack <http://camel.campbell.edu/~hammond/ham/SAEBTrack/>

APRStr from Bob Bruninga of PCsat fame

Bob still offers his very simple tracking system to those who do not require extreme accuracy, that is folks who may be using simpler, low gain antennas for working Low-Earth-Orbiters like PCsat.

APRStr uses a very simple means to move ONE azimuth rotator with the antenna set to [say] 30 degrees elevation and left set there. This would be by far the cheapest way to achieve "tracking"

and could suit many users' requirements, particularly beginners. It's a bit like the "tilted mast and one rotator" system we used so successfully on our mountain top expeditions on the

past. You can read what Bob has to say about this very simple yet useful system by pointing your web browser to Bob's site at: <http://www.ew.usna.edu/~bruninga/rotator1.html>

Another piece of tracking software to try

While on the subject of tracking satellites, I came across yet another piece of software devoted to this purpose the other day.

It's called by the unlikely and rather unfortunate name of "SCRAP" which is of course another of those [dreaded] acronyms we have become so familiar with in this computer age. It stands for: Satellite Contact Report Analysis & Prediction. Scrap is written by Bill Bytheway, AA6ED and is offered as an on-going project welcoming suggestions from users. It is similar in character to some other tracking software in that it uses public domain maps and earth textures for the display. It seems to be geared towards APRS as well as satellite tracking and may find application

among those users of specific APRS satellites like PCsat and future similar offerings. It features Internet updating of keps and also uses an Internet connection to download and subsequently display APRS connected stations. I haven't tried this feature yet but it could be interesting. I found the program a little clumsy to get going [could be my advancing years]. It does not pretend to be "software to drive your antenna by". Although designed for and tested in the Windows environment, the author claims it does not poke about in

your registry or put any "nasties" into your computer. It simply unzips into a directory structure that can be entirely deleted if you decide not to keep it. It is freeware. It requires a fast, capable computer. I have tried it on my laptop running Windows 2000 Pro and on a friend's super dooper machine running Windows XP Pro. My overall reaction was that while it has some intriguing features it would not displace Instant Track as my tracker of choice. From memory, this was my exact same reaction to "Nova".

Good things to come

In a recent AMSAT President's newsletter, Robin Haighton VE3FRH outlined the latest developmental news from the teams involved with "Echo" and "Eagle". In his words:

"Firstly let me comment on the status of Echo, our satellite that we hope will be launched later this year. Progress is good, and we hope to have the satellite under test during the late spring or early summer. Final testing prior to shipment will be carried out in our new facility at NASA's Goddard flight Center. I said "new facility" but in fact it is the same facility that we had many years ago when AMSAT first came into existence. Your Executive Vice-president Rick Hambly and Astronaut Ron Parise worked together to reacquire this building, close to the visitors center at

Goddard for AMSAT's use. Rick Hambly will be at the Dayton Hamvention as one of the speakers at the AMSAT Forum, he will be giving a detailed update on ECHO".

Hopefully I'll be able to include a summary of that report next month along with the six-monthly update. Robin goes on:

"The design concepts of the structure of Eagle have been completed and limited work is continuing based on our available income for this project. We have purchased the two Earth Sensors that were subject of a Financial

Challenge, issued at Fort Worth and have designed the Can-Buss internal communication system for use in Eagle. The CAN-BUSS Boards will be first flown on P3E by AMSAT-DL and various other organizations are looking at the AMSAT-NA design to determine if it would meet their requirements. This system will also be the subject of a paper at our Dayton Forum when Bdale Garbee will be presenting a paper on the topic".

Next month I'll include the regular six-monthly summary of all currently operational amateur radio satellites.

PLAN AHEAD

June 21 80m Dash for Wadda Cup (SSB)

July 5 Jack Files Contest (CW/SSB/PSK31)

(rules in May Amateur Radio)

VHF/UHF - An Expanding World

Weak Signal

David Smith VK3HZ - vk3hz@wia.org.au
There has been a bit of resurgence on the bands with a slow moving high across the Bight producing some excellent conditions to the west from VK3. From Melbourne, I managed to work Colin VK5DK in Mt Gambier on 1296 MHz with signals 5/9+. Colin also heard Charlie VK3FMD in Melbourne on 2403 MHz - Colin using his 1296 MHz antenna! The Esperance beacon was also audible in Melbourne but, unfortunately, no stations could be raised at the other end.

Unfortunately, the numbers across the Bight have diminished, at least temporarily. Bill VK6AS from Esperance is currently spending an extended period in Perth and his large antenna array on 2 m (8 x 16 element yagis) has succumbed to wind damage, suffering a broken horizontal boom and requiring extensive repairs. This leaves 91 year old Wally VK6WG, in Albany, as the only resident serious weak signal operator on the south coast of Western Australia.

6 m has also been fairly lively of late. Stations reportedly worked from VK include JA, W6, W7, KH6, XE (Mexico), BG (China), EZ (Turkmenistan), BG9 (China) and HL (Korea).

Doug VK4OE has been active "hotel room portable" around the countryside on 144 MHz, 2.4 GHz and 10 GHz. Earlier in the year, he was active in inner Melbourne and managed a number of contacts. Then, in May, he worked Wally VK6KZ while in Perth.

Ian VK1BG reports working his 100th VK3 SSB station - VK3ESE - on 2m. It has taken him 20 years to achieve this but, after the initial rush, he has seen a steady build up of new VK3 stations in recent years. Ian is a regular on the morning aircraft net and is always a good signal into Melbourne, working stations on 2m, 70cm and, occasionally, 23cm.

Speaking of the aircraft net, Gordon VK2ZAB raises a good point. In general, most of the net operation occurs up the

east coast of Australia, between Melbourne, Sydney and Brisbane. However, the upper limit for aircraft-enhanced contacts is generally accepted to be around 700 km - or about the distance from Melbourne to Sydney and Sydney to Brisbane. Thus the Sydney stations find themselves as the meat in the sandwich, needing to beam north and south. To overcome this, the net is divided into two for the Sydney stations, with 7am to 8am set for contacts to the north and 8am to 9:15am for contacts to the south. However, stations to the north and south of Sydney should not just operate within these time blocks. For a chance to work further than Sydney, southern stations should start before 8am and northern stations should continue operation after 8am. Hopefully they will find that the upper limit is greater than the currently accepted 700km.

VHF DX Net IRLP linkup

Guy VK2KU reports that the weekly FM net of the NSW VHF DX Group is now accessible to anyone who has access to an IRLP linked FM Repeater. This net takes place each Sunday at 11 am EAST on the Blue Mountains Repeater on 147.050.

The net has provided an opportunity for VHF DXers to get together to discuss any issues of interest, technical or otherwise. But more importantly, it provides an opportunity for other stations not equipped for weak signal SSB to listen or join in the discussions.

The Blue Mountains Club has now arranged for their repeater to be connected (for the net) to their IRLP Reflector. Anyone that wants to join the net from a remote IRLP node will need to connect to reflector 9505. All you need to do is send DTMF tones 9505 in a single transmission to your node, and it should connect.

It is hoped that VHF DX friends from across Australia (and beyond) will join in the discussions each week.

GippsTech 2003 - July 5 & 6

The 2003 Gippsland Technical Conference is just around the corner. For anyone interest in building and operating in the VHF, UHF and Microwave bands, this event is not to be missed. The venue is in Churchill, which is approximately 170 km east of Melbourne. Formal sessions will be held on Saturday followed by a Conference Dinner. Sunday will have some short talks, and demonstrations of equipment and techniques. Lunch is provided on both days and the cost is included in the (very modest) registration fee.

For more details and online registration, go to <http://www.qsl.net/vk3bez/>.

New VK4 24 GHz record of 90.5 km.

Russell VK3ZQB reports on his microwave exploits up north in late April:

Colin VK5DK, Bill VK3AMH and I travelled up to VK4 to conduct some microwave contacts and have a holiday as well. We met up with Errol VK4ZHL and set up some contacts with Neil VK2EI. Our first contact was from Mt Matheson north of Lismore to Point Lookout in the New England ranges near Dorrigo, a distance of 230.7 km. We had good signals from Neil on 10 GHz, but could not hear anything on 24 GHz. We returned the next day but were driven off the hill by drizzly rain.

We moved to another location near Cape Byron and Neil VK2EI set up near his home QTH on a hill called North Brother. Contact was made on 10 GHz but signals were very poor. I used my transceiver with its 2 watts output and Neil was able to hear me on SSB. Neil only has 250 mW and had to use CW to pass on his report.

We went back to Errol's QTH at Beachmere and planned our trip north. Our mission was not to break records but to look at some suitable microwave sites and be a tourist. Colin, Bill and Errol called in on VK4TZL at Hervey Bay and had some contacts with him on 10 GHz.

...the Sydney stations find themselves as the meat in the sandwich, needing to beam north and south...

I met up with the group again at Rockhampton where we spent a couple of days looking at suitable microwave sites. There was little or no propagation and we had a few contacts on 10 GHz with average results. We tried 24 GHz from a few spots with distances of 100 - 130 km but without success.

I was going to drive to Cairns and Colin, Bill and Errol were returning south. We had one last contact from Mt Archer near Rockhampton to lookout hill in Gladstone. I worked Colin, Bill and Errol at Gladstone on 10 GHz with 5-9 reports, then again on 24 GHz with 5-5 signal reports. The 24 GHz contact extended our previous VK4 record of 74 km to 90.5 km. The National 24 GHz record is owned by Colin VK5DK and myself, a distance of 200.8 km.

The equipment used in this expedition was a 10 GHz 1 watt Qualcomm transverter with 432 MHz IF owned by Colin VK5DK, a 2 watt 10 GHz DB6NT transverter with 144 MHz IF owned by VK3ZQB and 2 24 GHz 70 mW DB6NT transverters owned by Colin and myself.

Digital Modes

Leigh Rainbird - VK2LRR

This month, the usual writer of this column, Rex VK7MO is out on a DX-pedition with VK7TS at Lord Howe Island, grid square QF98. The two are operating under the call sign of VK9LS and are activating the Island on many bands including 2 m, 70 cm and 23 cm using modes such as FSK441, JT44, VFSKCW, CW and SSB. Lord Howe Island is within meteor scatter range of VK2, VK3, VK7, southern VK4, eastern VK5, 2L and FK8.

Equipment being used is an IC-910H, running 100 W into a 10 element 2.3 wavelength Yagi on 2 m. 75 W into a 17 element Yagi on 70 cm. 10 W into a 45 element Yagi on 23 cm.

Unfortunately, so far, Rex has had a poorer than expected location for tropo paths using JT44 and SSB. Bad weather has also damaged some of the antenna's requiring urgent repairs, and so has been mainly making contacts using FSK441 meteor scatter, but has also had some success with JT44 via the Moon (EME).

At time of writing, Rex had completed FSK441 contacts with - VK4TZL, VK4KZR, VK2FZ, VK2AKR, VK2KU, VK2AWD, VK2KK, VK2FLR, VK2TK, VK3KAI and VK3FMD.

Rex had copied signals but not

completed contact on FSK441 with - VK4ZR, VK1BG, VK2EI, VK3UM, VK3CY, VK3DD(U?) and VK3AFW.

Rex had managed to work three stations on 144 MHz EME using JT44. These have mainly occurred at Moonrise or just after. First contact was with Dave W5UN, completed in just over an hour. Rex also completed JT44 EME with KB8RQ and KJ9I. Also VK2CZ reports that he was able to partially decode signals from VK9LS at moonrise.

Rex will be back with a full report next month.

2m & 70 cm DX

Leigh Rainbird VK2LRR - vk2lrr@telstra.com

I mentioned in last month's report that, as we get into the colder months, we will see less duct openings and only shorter distances workable. I must admit, the month of April hasn't gone too badly and it's still looking good at the time of writing.

Significant ducting conditions occurred around 4 times during April.

The morning of the 9th saw good conditions around VK3 and also into VK5RMG Mt. Gambier repeater at around 650 km.

Saturday the 12th was an interesting one in that there appeared to be an Evaporation Duct, which formed after extensive rainfall on Friday night and early Saturday morning followed by a warm mid morning and afternoon. The duct itself began to appear just before midday and gave good enhancement down through central and western VK3 until some time in the evening. Some of the stations contacted were VK3ANW who at midday was 5/9+20dB, Ararat repeater was 5/9 at 410 km.

On the 14th of April a duct occurred around midnight, which took in what I'd call the Murray River path. This takes in Swan Hill, Robinvale and Mildura. This only lasted about an hour.

The big one for the month lasted a number of days starting on Easter Sunday morning, the 20th of April, and was last noted Wednesday morning the 23rd, but much weaker. This developed after an intense HIGH pressure cell wound its way from the Bight, moved to the south of Tasmania, travelled north across the centre of Tassie and ended up in the Bass Strait. A LOW-pressure cell near NZ was blocking its easterly travel and so it moved west and steadied near

Mt Gambier. It was at this point that the good conditions began. Very good signals were noted in the far south of VK3 and across to VK7, with stations east of Melbourne making effortless contacts to Mt Gambier and closer areas as well. Repeaters noted this way included Mt. Gambier 650 km and Naracoorte 600 km in VK5. In VK3 most distant were Otway Ranges 486 km, Ararat 410 km. Furthest simplex from here made to Geelong with VK3VSW 404 km, 5/9; and VK3KOS at Sunshine, around 350 km at a 5/7 signal. Chris VK3VSW also reported simplex contacts from Geelong to Penguin in Tasmania with VK7LCW Peter, on 2 m was 5/7, on 70 cm was 5/2 at 360 km. Kevin VK5OA in Mt Gambier reports that simplex contacts were easy for him right across to the eastern side of Melbourne, which still saw 5/9+ signals at over 445 km. No doubt there were many other interesting contacts made during the strong duct conditions.

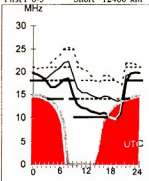
Stations noted as working from hilltop portable during April were VK3VTX Gavin, on Mt. Tarnan near Glenrowan was 5/9; VK3KBF Bert, was up at Mt. Buffalo with a 500 mW handheld and was a 4/3 signal here; VK3FIQ Geoff, went to the Grampians and peaked at 5/5; VK5KCX/3 Barry was at a Hill top near Castlemaine, signal to 5/7; VK2LGB Lachlan, was on a hill at Batlow with a handheld and not copied here.

As the saying goes "Activity creates activity", this is what I have been trying to get happening lately by being more active and calling on the National FM Calling frequency of 146.500 more often. There have been some interesting times had with operators making contacts and watching the varying conditions from the bottom of VK3 up into southern VK2, with most stations able to hear each other seemingly around 50% of the time without strong ducting. Stations active for April included VK3ANW Noel, VK3HEN Darren, VK3TEX Les all at Kyabram; VK3XDP Peter, VK3GOM Graham, VK3JGL Graham all at Bendigo; VK3VSW Chris at Geelong (404 km); VK3DSF Max at Shepparton.

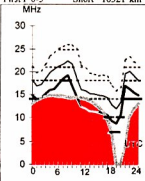
I'd like to hear from other Amateurs around Australia who may have made long distance contacts on 2 m and 70 cm FM, on simplex, or to distant repeaters in the previous few months, for possible inclusion in future columns.

Adelaide-Anchorage 30

First F 0-5 Short 12466 km

**Brisbane-Berne 315**

First F 0-5 Short 16321 km

**June 2003**

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Legend

Frequency scale

UD
E-MUF
DWE
F-MUF
ALE
>10%
>50%
>90%

Time scale

HF Predictions

by Evan Jarman VK3ANI

34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies as identified in the legend are:-

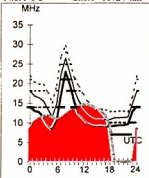
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

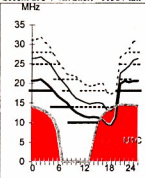
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

Adelaide-Dakar 233

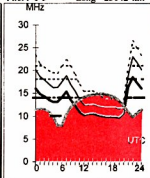
First F 0-5 Short 16724 km

**Brisbane-LosAngeles 59**

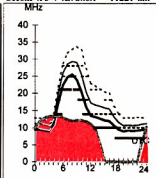
Second 2F3-7.4E Short 11564 km

**Canberra-London 136**

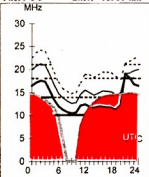
First F 0-5 Long 23042 km

**Darwin-Capetown 231**

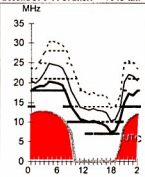
Second 4F3-4.4E Short 11221 km

**Adelaide-Ottawa 58**

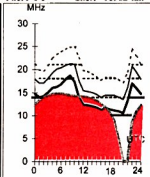
First F 0-5 Short 16901 km

**Brisbane-Osaka 344**

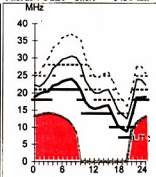
Second 3F6-11.3I Short 7148 km

**Canberra-London 316**

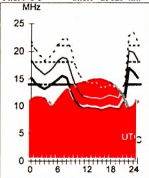
First F 0-5 Short 16982 km

**Darwin-Tokyo 10**

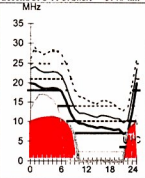
First 2F4-8.2E Short 5436 km

**Adelaide-Stockholm 142**

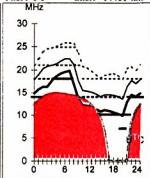
First F 0-5 Short 25029 km

**Brisbane-Singapore 293**

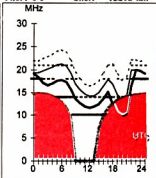
Second 3F8-11.3I Short 6146 km

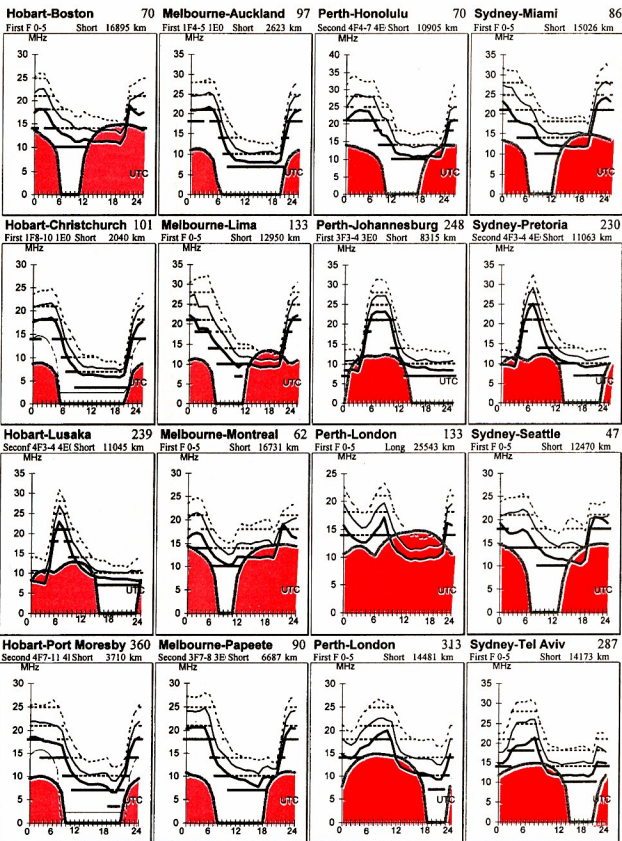
**Canberra-Moscow 317**

First F 0-5 Short 14481 km

**Darwin-Vancouver 42**

First F 0-5 Short 12212 km





Spotlight on SWLing

Ron Henderson VK7RH

The Iraq War ends swiftly

The Coalition forces completely overwhelming the Iraqi forces and dismantled the Saddam regime in about a month. Baghdad fell on the 9th of April and the rest of the country quickly followed. There has been much damage to the telecommunications infrastructure from the relentless bombing campaign and what remained disappeared in the looting which followed. As a result, the telecommunications sector, along with most other infrastructure, is not functioning. It will be a huge logistical undertaking to repair it.

All broadcast transmitters were destroyed or severely damaged, with the Coalition forces installing portable stations. It will be a while before HF senders are heard again, probably when the interim Iraqi Authority is installed under the Coalition.

Iraq's neighbours are nervous, Iran in particular has launched official and semi-clandestine broadcasting stations broadcasting in Arabic to the Iraqi Shia majority, long repressed by Saddam. They favour a government modeled on Iran and have established a station, on 720kHz, close to the Iran-Iraq border. The official Voice of the Islamic Republic of Iran in Teheran has expanded their Arabic programming on 9935 kHz at 2100z, not only to reach Iraq but to the Arab Diaspora.

Teheran broadcasts to Australia in English at 2130 on 9870 but as the station does not co-ordinate their frequency selections, there are inevitable frequency clashes. Bahrain is another Gulf neighbour of Iraq and has reactivated shortwave senders on 9745 on reduced carrier USB. The Arabic programs are a relay of a domestic FM service.

VLF Station GBR closes.

The giant VLF British Telecom station at Rugby, England, which served The Royal Navy for 77 years, 3 months, made its last transmission on 16 kHz at midnight on 31 March. The antenna farm on 910 acres will probably end up as real estate development. Additional LF and HF facilities were located there

also. These have since ended but Rugby is still the home of the MSF time and frequency signals. BT is contracted to operate those for the National Physics Laboratory until 2007, but it is unknown where those signals will originate from when the Rugby antennas come down. Recent transmissions on 55.5kHz may have been tests by BT of a new transmitter and antenna system for the 60kHz MSF service.

Grundig files for Bankruptcy

The German Electronics manufacturer filed for bankruptcy after several failed rescue bids. Started after WW II by Max Grundig, the family-owned firm became famous in home electronics, selling many Germans their first TV set. Two rescue bids foundered because of the ever increasing debt burden and lack of profits and the firm finally bowed to pressure from global giants such as the Sony Corporation and Samsung Electronics. Its brand name and sales network still have value, but it appears to be the end of the line for the one-time driving force in innovative technology. Grundig in the USA is a separate company and will continue importing their popular shortwave sets from China and Taiwan.

Another Icon leaves shortwave

My first SWL report as a 10 year old was for a QSL to Radio HCJB in Quito, Ecuador. It took over a year to receive a reply as, in 1937, all mail to South America was by surface mail. I still have the QSL with its Inca motif and it was for 11915. I did not put down the time, as I did not know about GMT. HCJB, far away in the South America jungles was indeed more exotic than the chimes of Big Ben from London or the VOA in Washington.

HCJB was very easily heard by many of us as they targeted the South Pacific and this continued until January of this year. HCJB Australia then became operational from Kununurra WA but they have had difficulties since. In the

middle of May, HCJB management stunned the World by announcing that they were to cease broadcasting all programming outside of South America as from the 31st of May. Programming will continue in Spanish, Portuguese, Quechua and German, mainly for the benefit of missionaries in Latin America but they are going to increasingly broadcast via domestic FM or AM stations similar to that of Trans World Radio in Bonaire. Plans also have been scrapped to move the HF senders to Guayagil from Pifo. The latter locality is to become the site of the new Quito International Airport.

This decision means that several popular programs such as "DX Partyline", "Ham Radio Today" and "Saludos Amigos" will also be axed. I believe Bob Padula is hoping to get a DX program over HCJB Australia. I expect that HCJB Australia will quickly develop their own identity. English programs are continuing from Kununurra and they are hoping to expand on to adjacent land to increase their antenna farm.

The present senders are well below their peak capacity and transmissions are believed to have between 11 and 25 kW, particularly to the South Pacific. Transmissions to the Indian sub-continent are higher.

DRM Starts on June 16

The German external broadcaster has now relocated to Bonn and will be the first international broadcaster to have regular programs using the DRM platform. This service is to come online as from the 16th of this month, coinciding with the World Administrative Conference in Geneva. Radio Netherlands in Hilversum is also poised to join them and will broadcast live coverage of the Tour de France daily.

Swiss Radio International are also going to be using DRM from Sottens within Switzerland on the 16th of June and will be a rare opportunity as SRI mainly broadcasts from Julich or French Guiana. The transmission is a one off for the WARC in Geneva.

Well that is all for this month. Don't forget you can email me at vk7rh@wia.org.au.

The Entry Level Licence discussion

Just what is happening?

This is rather late, but I am in full agreement with Neville (VK2YO) and his letter in *Over to You*, Feb 2003.

To say I was dismayed by the tone of various comments regarding the Foundation Licence, which appeared in the May 2003 issue of AR, would be an understatement. My observations of the situation leaves me a little bewildered; in particular, in relation to the following:

1. The WIA is broke - now and predicted for 2004;
2. The Foundation Licence appears to be set in concrete;
3. Just what is happening?

1. WIA is Broke:

According to the information in May's issue, the WIA represents less than 25% of all amateurs in Australia (ref. page 7 May AR). Not only does the WIA represent less than 25%, numbers are falling (from 4,071 in 2001 to 3,936 in 2002) and it would appear that this will continue.

If the WIA is broke, what on earth are we doing by introducing a new Foundation Licence with privileges that are akin to a full licence holder now, when we should have an all out effort into attracting and promoting AR as a whole, not simply lowering the standard?

It's obvious, from reading of a recent member's attempts to join our ranks (not to mention my own attempts to arrange for a CW exam around the Port Augusta area - no 'official testing officers'), that we (i.e. WIA) need to get our own house in order before we start changing the face of AR as a whole.

2. Foundation Licence Appears set in Concrete:

I found it quite disturbing to read the President's 'WIA Comment' in May AR Mag. I realise of course that he was writing from a hypothetical and future perspective, but really, this whole issue of the Foundation Licence seems to have grown from a pepper-grain size seed to a full blown and 'accepted' fact in an incredibly short period of time.

What ever happened to the democratic

process? I haven't seen any questionnaires, surveys or been asked what I think; the WIA appears to have simply gone out on its own and accepted the whole issue as a foregone conclusion without consultation?

Not all of us 'live' on the internet or 'live' to receive email messages. Many of us work and many of us simply don't have much time to even listen to the Sunday Broadcasts. A great many of us rely on the AR magazine for our news. Has this whole issue been 'slid in sideways' without anyone looking, or has it been going on for some time? Whatever the reason, what about 'due process'? One could be forgiven in thinking personal agendas were at play. Just because it's been good for the UK does not necessarily mean it will be good for us.

Long gone are the days when we were all brought up like good little Britains, albeit second-class colonials. We, like it or not, are part of Oceania (polite for Asia), not part of the EEC. Our politics may be similar, our legal system may be similar, but that's where the similarities end.

3. Just What is Happening?

The current WIA 'Federal and State Divisions' surely must be the only type currently in existence. Professional pilots have their own 'voice', one that is Federally based; even the dear old Private Pilot is represented by a 'so-called' federally based 'voice' (Aircraft Owners and Pilots Assoc - AOPA); there are state representatives, but not separate state divisions as we do in the WIA.

Surely, is not now the time for us (WIA) to get our own house in order before we start messing up the whole neighbourhood (i.e. all AR operators)? And who gave the WIA the right - don't forget that 25%!

To say I'm disappointed would be an understatement. Quality, any day, is better than quantity. If the membership of WIA is dwindling, then let's do something *positive* about it, not play with the system in the vain hope that something *might* happen and suddenly our numbers swell by 'huge amounts' - who knows, we might even see

reasonably affordable WIA fees if we abolished the outdated and unwieldy State Divisions.

My two-bob's worth and my opinions only. I do take my hat off to all volunteers within the WIA; however, if any member does volunteer, it is just that. It is not a mandate to act as a dictator, nor is the WIA a solid voice representing all AR operators - let's do something about that before we mess it all up and we all end up losing.

Peter Whellum VK5ZPG

At risk of getting over-exposed

For years, we've heard from the anti-Morse mob that "Morse is killing the hobby". Before Federal goes off and implements this Foundation/Communicator licence, could we have a few months at least to witness the postulated explosion in Amateur numbers when the Morse code test requirement is lifted at WRC2003?

If there is a dramatic and sustained increase in our ranks, then surely there is no need to dumb down the technical side as well by introducing this appliance operator licence grade. If, as I suspect, dropping the test has no lasting effect, then perhaps we should question whether the amount of effort required to gain a licence has *ever* been the reason for declining numbers.

In any case, if we hope to increase the Amateur population, after dropping the Morse test and/or lowering the technical bar, we will have to do what we should have been doing for years anyway, i.e. *publicising the hobby* to the non-Amateur public!

73 Richard Murnane VK2SKY

Views expressed in the *Over to You* pages are not necessarily those of the WIA.

Send letters to:

**Editor
AR Magazine
34 Hawker Crescent
Elizabeth East SA 5112
or email
edarmag@chariot.net.au**

Over to you

The Entry Level Licence discussion

Is the current proposal necessary or even the right way to go?

1. Common requirements for Licencing.

- (a) A Licence is proof that a person has reached an acceptable level of competence in a trade or profession.
- (b) Monitoring of a licensee's performance is normally built-in to Licence systems with procedures for handling situations where licencees fail to comply with trade standards.
- (c) Provision is made for post-licence training.

NONE of these criteria are met in the process under discussion; so, why is a licence necessary at entry level?

2. An alternative.

It makes more sense to do without the complication of paid-for licencing, but make student membership of the WIA the pre-condition.

This would be cost-attractive to newcomers to Amateur Radio and would relieve ACA of an administrative burden.

More importantly, regular receipt of AR Magazines (Upgraded issue by issue with appropriate advice) could provide progressive enhancement of student member's knowledge.

This one vital step could minimise the shambles that will occur if people with only a day or so's "training" are allowed to use relatively complicated 100 watt multi-mode transceivers on amateur bands.

3. Responsibility for overseeing compliance.

Self regulation has been a joke. In recent years supervision and control of Amateur Services has been notable only for its absence. Authority for supervision and control lies with ACA, NOT the WIA, or any of its Members.

4. The International organisation for citizen intercommunication.

A sensible internationally agreed framework already exists i.e.

- (a) The amateur Service supposedly caters for those interested in radio techniques and technical investigation
- (b) A Licence-FREE Citizen Band Service caters for those with social communication requirements. This Service by its nature introduces participants to simple radio operations and procedures.

So why re-invent the wheel at a cost to the newcomer, and un-earned income for the government?

5. The need for supervision by the government's telecommunications authority.

It is matter for regret that many amateurs do not understand the differing roles of the Amateur and CB Services.

The amateur service would benefit tremendously were ACA to use its undoubted administrative power (as distinct from Criminal proceedings) to suspend licencees who deliberately use amateur service frequencies for protracted discussion on political, religious and social matter, instead of intercommunicating on technical self-training matters.

ACA could well start with two well known VK3 "Amateurs". The shock waves from that would do the amateur service the world of good and set a level of compliance that has not been seen in recent years.

6. The probable end result.

- (a) The FREE UHF & HF CB Service will continue to absorb the talkers and button pushers.
- (b) The proposed amateur licence will be unattractive, and unable to compete with a free service.
- (c) Active recruitment of CB Service users might produce a few student members, but at the cost of a discounted membership fee.

- (d) The status quo in regard to Unrestricted operators will remain static until there is a realisation that technically enthusiastic members of the WIA are more important than the number of amateur licencees.

- (e) The adverse public image of AOCP holders as chattering hobbyist "hams" rather than members of a responsible licenced technically based service will remain.

Conclusion

If the Amateur Service in Australia is to survive, obtaining Government moral and financial support needs to be the WIA's primary objective!

The Amateur Service would be better served if the WIA Executive concentrated its efforts on forcing the Government into a realisation that the Amateur Service is worthy of, and needs, proper Government support, because failure to receive such an undertaking would eventually spell the end of the amateur service in Australia.

Obtaining an understanding of how the ARRL successfully lobbies its government would be a worthwhile starting point in that vital process.

VK1AU.

Entry Level Licence - what should happen now!

A lot has occurred in the past month since the publication of the Linton-Harrison Paper 2003 that highlighted the decline in amateur radio in Australia and proposed solutions to address the situation.

The WIA Federal Council meeting in Adelaide fully discussed the licensing system in Australia, assessed the United Kingdom's "Foundation Licence", and made decisions in the best interest of amateur radio.

The WIA policy is to seek a new Entry Level Licence designed for Australian conditions. The training, syllabus, assessment and mentoring elements of the new licence will take a new approach to qualifying people for an

The Entry Level Licence discussion

amateur licence. The syllabus will be set at about the level originally intended, but not maintained over the years, for the Australian Novice licence.

The WIA decision to seek a two-tier licence system – Unrestricted and Entry Level, is in recognition that the Australian AOCPL theory standard is higher than required internationally, and the Novice theory is at the US Technician (Limited) Licence standard.

There is a small difference between the current Novice and where the AOCPL standard should really be set. The licence structure will also change with the anticipated removal in 2004 of mandatory Morse code tests for amateur licences.

What are the next steps that need to be taken? The WIA needs the support of all radio amateurs as it embarks on a period of consultation with the amateur radio fraternity about the Entry Level Licence. Have your say by completing its survey!

The smooth introduction and very success of the Entry Level Licence depends on existing radio amateurs and radio clubs. The WIA Divisions need to fully brief their member clubs and muster support for the recruiting of the new breed of radio amateurs.

A few clubs already have virtual waiting lists for the new licence. Through the resources of the clubs, teams of experienced and knowledgeable radio amateurs need to be identified to provide the training required for the Entry Level Licence.

These must be different people from those who will conduct the final assessment of each candidate. The clubs that are well prepared will not only be helping to ensure that amateur radio survives in Australia, but that their club and the WIA have futures too.

The Entry Level Licence on its own is only part of the solution. A full package of activity including promotion of amateur radio is required.

While the WIA and radio clubs will kick-start the new licence, it will also need to be picked up by youth organisations, the scouting and guiding movements, individual schools, and

ultimately the education departments in each state and territory.

There is a role in this ongoing project for every existing radio amateur, if they want it, and willing to seize the opportunity to put something back into the hobby. Are you ELR (Entry Licence Ready)?

By Jim Linton VK3PC & Roger Harrison VK2ZRH

WIA membership as a licence condition?

I find it increasingly difficult to understand the real reason behind the push for the proposed new Licence. It does not appear to be coming from the members. As a matter of fact I spoke with at least 50 amateurs at the latest BARCFEST in Brisbane and not one was in favour of it, although a couple expressed a degree of disinterest.

Opinion is that the WIA (desperate for new members) sees it as a chance to capture the much needed numbers to boost its fiscal base and allow it to operate better. Another suggestion is that the push is coming from the manufacturers of radio and electronics equipment – (why wouldn't they).

Our bands are crowded enough now without introducing further operators. The natural increase is there without adding to it. The spectrum won't expand to cater for the new arrivals. Clearly, any thought to add others less qualified and less disciplined will exacerbate even further the problems we now encounter. Yes, the WIA seems powerless to stop the language, stupidity and general disregard for band plan agreements now. How will it go with others who have not had to go through a reasonable "barrier" to obtain access to our privileges?

I and many others believe most emphatically that the answer is simple.

- 1) No new licence
- 2) Compulsory membership of the WIA as a licence condition. This would have to be at a nominal cost. (If everyone was a member the cost could be reduced significantly)

- 3) The entry conditions remain the same.

I am not aware that the WIA has approached the Government on this matter but there are more and more sporting and hobby associations that now have formal membership of an affiliated, professional or semi-professional body or association as a condition of a licence. We should become one of them without delay.

Moreover, the WIA (of which I am a member) should be given both the power and the facilities to properly control its members and the manner in which they adhere to the code of practice. Transgression of our rules should result in suspension and/or expulsion with the subsequent ramifications extending to the recalcitrant's formal licence. I now challenge the WIA to put this matter before the appropriate Government body and to stop listening to empty cans and commercially interested parties in the retail sector.

If the new licensing is introduced I can only say that with regret I will no longer be a WIA member. There are many others who feel likewise.

W P (Bill) McCarthy VK4WMC
Phone /Fax 07 5541 4730

What? No home-brew!

I write with some concern regarding the proposed Foundation Licence and VK2's motion regarding entry level as reported in the May AR and in particular to "no home brew transmitters."

Was this proposed by someone with a vested interest in the sale of communication equipment? Surely the amateur radio hobby requires technical hands-on experience and not become just a talk fest.

I hope that the subsequent amending motion deleted this unrealistic approach to our hobby. It is important that young people should be encouraged to build and experiment with equipment and this could result in more technical articles in AR because of that interest.

W.A.Adams VK3ZW0.

Hamads

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Ernie Hocking, President
Amateur Radio April 2002

“There is no denying that radio today still has all the magic that attracted people to the hobby all those years ago, when it first emerged onto an unsuspecting world.”



Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601
President Alan Hawes VK1WX
Secretary Deane Walkington VK1DW
Treasurer Linden Orr VK1LSO

VK2 Division New South Wales
109 Wigram St, Parramatta NSW
(PO Box 432, Harris Park, 2150)
(Office hours Tue., Thu., Fri., 1100 to 1400 hrs.)
Phone 02 9689 2417
Web: <http://www.wiansw.org.au>
Freecall 1800 817 644
e-mail: vk2wi@ozemail.com.au
Fax 02 9633 1525

President Brian Kelly VK2WBK
Secretary Owen Holmwood VK2AEJ
Treasurer Noel May VK2YXM

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue 10.00 - 2.30)
Phone 03 9885 9261
Web: <http://www.viawic.org.au>
Fax 03 9885 9298

e-mail: viawic@viawic.org.au
President Jim Linton VK3PC
Secretary John Brown VK3JB
Treasurer Jim Baxter VK3DBQ

VK4 Division Queensland
PO Box 199, Wavell Heights, Qld. 4012
Phone 07 3221 9377
e-mail: office@v4q.powerup.com.au
Fax 07 3226 4929

Web: <http://www.via.org.au/vk4>
President Ewan McLeod VK4ERM
Secretary Bob Cumming VK4YBN
Treasurer Bill McDermott VK4AZM

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992

web: <http://www.sant.via.org.au>
email: peter.reichelt@bigpond.com

President Trevor Quick VK5ATQ
Secretary Peter Reichelt VK5APR
Treasurer Trevor Quick VK5ATQ

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873

Web: <http://www.via.org.au/vk6>
e-mail: vk6@via.org.au

President Neil Penfold VK6NE
Secretary Roy Watkins VK6XV
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VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)

Web: <http://www.via.org.au/vk7>
email: vk7tg@usoz.com

President Phil Corby VK7ZAX
Secretary Dale Barnes VK7DG
Treasurer Dale Barnes VK7DG

Broadcast schedules All frequencies MHz. All times are local.

VK1WI transmits each Thursday evening at 2000 hrs local time on VK1RGI 146.950 MHz and 438.375 MHz including the linked repeater system on VK2RGN Goulburn, VK2RHR High Range, VK2RMP Madden Plains and VK2RTW Wagga Wagga. VK1 Home Page <http://www.vk1.wia.amp.org>
Annual Membership Fees. Full \$80.00 Pensioner or student \$71.00. Without Amateur Radio \$48.00

VK2WI transmits every Sunday at 1000 hrs and 1930 hrs on some or all of the following frequencies (MHz): 1.845, 3.595, 7.146, 10.125, 14.170, 18.120, 21.170, 24.950, 28.320, 29.170, 52.150, 52.525, 144.150, 147.000, 432.150, 438.525, 1273.500. Plus many country regions on 2m and 70cm repeaters. Highlights are included in VK2AWX Newcastle news Monday 1930hrs. on 3.593, 10 metres and local repeaters. The text of the bulletins is available on the Divisional website and packet radio. Continuous slow mode transmissions are provided on 3.699 and 145.850. VK2RSY beacons on 10m, 6m, 2m, 70cm and 23cm. Packet on 144.850. Annual Membership Fees. Full \$80.00 Pensioner or student \$63.00. Without Amateur Radio \$50.00

VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies, 3.615 DSB, 7.085 LSB, and FM/Rjs VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM/Rjs VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.
Annual Membership Fees. Full \$83.00 Pensioner or student \$67.00. Without Amateur Radio \$51.00

EVERY SUNDAY, at 9am LOCAL (Sat 2300 UTC). From Far North Queensland On 7.070/2 MHz. From South East Queensland: 1.825, 3.605, 7.118, 10.135, 14.342, 21.175, 52.525, 147.000, 438.500 MHz. Right throughout VK4 scan 146.6 to 148.0 MHz again at 9am local. SUNDAY 6:45pm hear LAST week's QNEWS broadcast 3.605 and 147.0 MHz from South East Queensland. MONDAY 7:00pm hear YESTERDAY's news again on 146.875 MHz broadcast from Brisbane Bayside repeater, and then 7:30pm on 3.605 and 147.0 MHz from Stn East Queensland. Text editions on packet internet and personal email, visit www.via.org.au/vk4 News is updated 24/7 in both text and audio on this site. MP3 Audio from same website by 2300 hours each Saturday. Contact QNEWS, packet p QNEWS@VK4WIE.BNE.OLD.AUS.OC email qnews@via.org.au
Annual Membership Fees. Full \$95.00 Pensioner or student \$81.00. Without Amateur Radio \$69.00

VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.875 MHz FM. The broadcast is available in 'RealAudio' format from the website at www.sant.via.org.au Broadcast Page area.
Annual Membership Fees. Full \$88.00 Pensioner or student \$73.00. Without Amateur Radio \$58.00

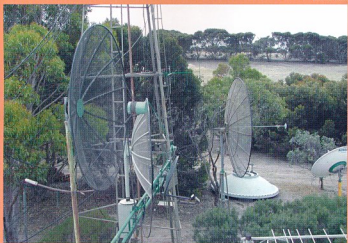
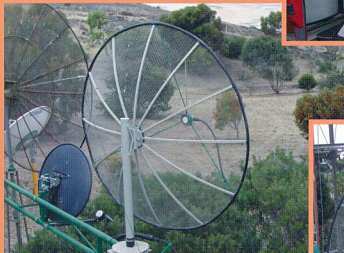
VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Catbaly, 147.350 (R) Bussellton, 146.900 (R) Mt William (Bunbury), 147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz: country relays on 146.900, 147.000, 147.200, 147.250 and 147.350 MHz. Also in 'RealAudio' format from the VK6 WIA website
Annual Membership Fees. Full \$71.00 Pensioner or student \$65.00. Without Amateur Radio \$39.00

VK7WI: At 0930 hrs every Sunday on 146.700 MHz FM (VK7RHT, Hobart) and relayed on 147.000 MHz FM (VK7RAA, Launceston), 146.625 MHz FM (VK7RMD, Ulverstone), 146.750 MHz FM (VK7RNW, Ulverstone), 147.075 MHz FM (VK7RWC, Rosebery), 3.57 MHz LSB, 7.090 MHz LSB, 14.130 MHz USB and UHF CB Channel 15 in Hobart area.
Annual Membership Fees. Full \$90.00 Pensioner or student \$77.00. Without Amateur Radio \$57.00

VK8 Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz. The broadcast is downloaded via the Internet.

VK5BQ

This magnificent UHF station is run by B.C. (Brian) Cleworth VK5BQ from Stansbury on South Australia's Yorke Peninsula, west of Adelaide. The main activity is VHF, UHF and ATV.



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